




Article

Research on the Conservation and Utilization of Landscape Heritage in Modern Urban Parks in Shenyang, China

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Abstract: The transition analysis and type division of landscape heritage are the effective management methods to achieve the overall conservation and targeted utilization of modern urban parks. In this study, Shenyang Zhongshan Park, the first modern urban park in Shenyang, was taken as the research object to explore the historical and cultural value of modern urban parks in Northeast China. The current status and transition characteristics of landscape heritage were analyzed, and the landscape heritage types were divided by their conservation and utilization evaluations. A total of 44 landscape heritages existed in Shenyang Zhongshan Park, including three categories, i.e., 15 historic sites, 20 cultural comprehensive sites, and 9 natural sites. Based on the IPA model, the landscape heritage was further divided into three subcategories, i.e., already designated for conservation (ADC), should be designated for conservation (SDC), and should be restricted scale (SRS). ADC was composed of one historic (Chiyoda water tower), two cultural comprehensive (water sources), and three natural (ancient trees) landscape heritages. SDC was a landscape heritage with long construction age, high importance, poor conservation, and high utilization, which can represent the cultural characteristics of the park and the need to speed up the improvement of its protection system. SRS weakened the cultural characteristics of the park. Its construction intensity should be reduced to highlight the core themes of the park (i.e., historical and cultural themes). In the future, modern urban parks should be conserved and utilized based on identifying different landscape heritage types. This study provides a theoretical basis for the management and development of modern urban parks from the perspective of conservation and utilization of landscape heritage.

Keywords: modern urban park; landscape heritage; transition characteristic; type division; conservation and utilization



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1. Introduction

Modern urban parks, as urban facilities, not only have regional characteristics and higher historical and cultural values but also usually have more landscape heritages that should be designated for conservation. Landscape heritage is defined as “an environmental landscape with historic value inherited in the future” [1]. The concept of landscape heritage breaks down the limitations of the existing legal norms of protected objects, including several categories, from single structures to the whole park, and from the material to the spiritual. Landscape heritage includes natural and ecological environments, cultural and historic human landscapes, and landscapes with a heritage nature. Some countries internationally, such as Japan and the United States, have carried out research on landscape heritage protection previously. The Japanese Society of Landscape Architecture established

the Committee of Landscape Heritage Preservation and the Standing Committee of Landscape Heritage Research in 1989 and 1998, respectively. Relevant studies focus on modern heritage gradually. However, China has not established a relevant urban park law, and modern urban parks have not yet become conservation objects. Therefore, defining the cultural value of modern urban parks and rationally conserving and utilizing the landscape heritage have become important issues to be solved.

In previous studies, scholars mainly focused on the planning history and transition characteristics of modern urban parks. For example, Uchiyama (1976) reviewed the planning concept and characteristics of the historical evolution of New York's Central Park [2]. In the 1840s, the disadvantages of the old urban pattern emerged with the influx of a large urbanized population. New York's Central Park addressed the problem of insufficient open space in the city and promoted the formation of the urban park system. Yozaburo (1994) explained the development of the garden building of Foreign Soul and Talent of Hibiya and Yokohama Parks by analyzing the historical processes of Europeanization of Japanese City Park [3]. The park, a new urban installation that originated in the west, was transferred to Japan and combined with traditional Japanese gardening technology. Since the 21st century, with the prominent issue of the open management of modern urban gardens, more and more scholars have realized the importance of conserving the historical and cultural landscapes of modern urban parks based on analyzing their historical evolution. Li et al. (2004) analyzed the problems faced by the open management of Wuhan Zhongshan Park, which was built at the beginning of the 20th century, and for which reasonable conservation suggestions were put forth [4]. Using the Beijing Sajik Altar at Zhongshan Park as an example, Zhuang et al. (2011) expounded its historical evolution, explaining the future direction of the development of the park's conservation, management, and utilization [5]. Kümmerling and Müller (2012) analyzed the relationship between the landscape design style and conservation value of a historic park located in Weimar, Germany [6]. Marion (2014) put forward conservation theories and legislative frameworks for historic gardens and historic buildings [7]. In recent years, more attention has been paid to the analysis of public participation in the study of modern gardens, which indicates that the utilization of modern gardens is receiving more attention and will have the same important status as conservation. Ueyasu (2015) analyzed the formation process and characterized public participation in Ueno Park [8]. Abdel-Rahman (2016) took ten existing urban parks in Cairo, Egypt, which were built in the 19th and 20th centuries, and analyzed historical changes and the present circumstances of the cultural landscape of historic parks in the area [9]. Osaka (2017) analyzed the influence of users' gender on the conservation and use of modern urban parks [10]. Yang and Qiu (2021) excavated the historical value of Wuxi Public Park (one of the earliest urban parks built by Chinese people in modern times) and the problems faced in its conservation process [11]. Jin and Lai (2022) analyzed the objective and humanistic aspects of modern park recreation in terms of historical bearing objects, and they proposed the external and internal attributes of modern parks' conservation and renewal from the perspective of leisure and recreation [12]. While analyzing the importance of the landscape conservation of modern urban parks, the above research also explored the relevant conservation legislation framework to provide a certain basis for the planning and utilization of modern urban parks, but there is still a lack of targeted management strategies for conservation and utilization based on the historical and cultural value (i.e., heritage importance) and current status of the landscape.

This study focuses on the field of landscape architecture heritage protection, focusing on exploring the conservation and utilization of modern urban parks' landscape heritage in Northeast China. Currently, research on modern urban parks in Northeast China mainly focuses on the evolution of the planning and development of green spaces. For example, Koshizawa (1978) recorded the urban planning and implementation of Mukden in the 1930s [13]. Sato (1985) introduced urban park greening in Manchuria during Japanese colonial rule [14]. Tang (1995) introduced a brief history of urban planning in Northeast China [15]. Li et al. (2003) discussed the historical process through which Japan took

Manchuria as the testing site of modern urban planning theory in Europe and America [16]. The above studies discuss the construction and development of modern urban parks in Shenyang from two perspectives, i.e., urban planning and park greening. Li and Ishikawa (2010) analyzed the changes in the overall planning of urban parks in Shenyang from the end of the 19th century to 1945 and divided the development of modern urban parks in Shenyang into the feudal, semi-colonial, and colonial periods [17]. Zhang and Li (2016) summarized the construction and development changes of modern Shenyang's urban park green spaces in three different historical periods: the late Qing Dynasty, the Republic of China, and the Manchukuo period [18]. However, there have been few studies on the conservation and utilization of modern urban parks from the perspective of landscape heritage, and there is a lack of appropriate evaluation methods. Therefore, in this research, Shenyang Zhongshan Park was taken as the research object to carry out a case study, and the IPA method was used to identify the types and characteristics of landscape heritage conservation. This method was first proposed by Martilla and James (1977) and applied to the attribute research of locomotive industry products [19]. In 1989, Evans and Chon applied this method to the study of tourist destinations [20]. The IPA method has the characteristics of intuition and strong operability, and it is widely used in various fields, such as product evaluation and tourism evaluation. In recent years, it has gradually been used for the importance and satisfaction analysis of scenic spots and parks [21–24]. This study helps to clarify the regional characteristics of Shenyang, excavate the historical and cultural value of modern urban parks, and provide a clear management strategy for the conservation and utilization of the cultural comprehensive landscape in modern urban parks from the perspective of landscape heritage. It also provides a research paradigm for promoting the sustainable development of modern urban parks.

2. Materials and Methods

2.1. Study Object

Shenyang is the political and economic center of Northeast China. There are ten existing modern urban parks in Shenyang (Figure 1), of which Zhongshan Park is not only the earliest existing urban park, which was built after the new urban planning of Shenyang in the semi-colonial period, but also the earliest modern urban park in Shenyang that integrates eastern and western gardening arts. Thus, Zhongshan Park, the most representative modern urban park in Shenyang, was taken as the study object. Shenyang Zhongshan Park (originally called “Chiyoda Park”, hereinafter referred to as Zhongshan Park) was established in 1919 by building a nursery as the reserved land for the park. It was initially completed in 1926 and renamed “Zhongshan Park” in 1946 [14,25–27].

The concept of landscape heritage was first proposed by Shinji (2008) [1]. Deng et al. (2009) compared the laws and regulations related to landscape heritage and the objects of heritage conservation in China and Japan and proposed the definition of Chinese landscape heritage—that is, the existing landscape heritage with historical, cultural, and natural values that should be inherited as a whole [28]. Based on the classification standard of the degree of humanity and nature, landscape heritages in China were divided into three categories: (1) historic landscape heritage with large proportions of historical value; (2) humanity in history and local conditions, such as cultural landscape and other cultural comprehensive landscape heritage in the middle field; and (3) natural landscape heritage with large proportions of natural value. In this study, landscape heritages in Zhongshan Park were divided into three types, i.e., historic landscape heritage (HLH), cultural comprehensive landscape heritage (CLH), and natural landscape heritage (NLH), based on the above definitions and classifications.

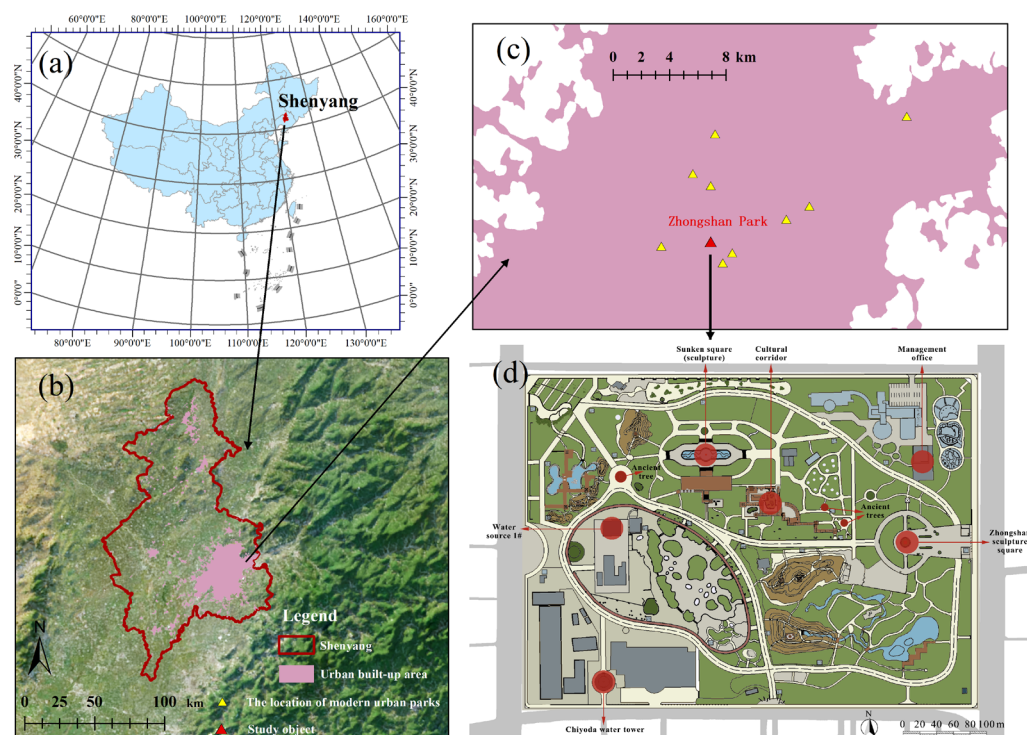


Figure 1. Distribution map of modern urban parks in Shenyang, and the master plan and key sites of Shenyang Zhongshan Park. (a) Shenyang in China; (b) the urban built-up area in Shenyang; (c) the distribution of modern urban parks in the study area; (d) Overall planning map of the study object.

2.2. Data Collection and Analysis

First, current drawings, landscape heritage pictures, and other related information were obtained through field research. Then, through referencing the records of the operation and evolution of the Manchu Railway-affiliated areas from the 1910s to the 1940s, along with local documents (i.e., the *Shenyang Records* and *Shenyang Daily* (1949–2018)), the historical changes of the park were divided into four periods, including the Republic of China (1919–1948), the early period of New China (1949–1977), reform and opening up (1978–1999), and the 21st century (2000–present). These four periods correspond to the following construction ages (t) of the existing 44 landscape heritages of Zhongshan Park: $t \geq 74$ years, $44 < t < 74$ years, $22 < t \leq 44$ years, and $t \leq 22$ years, respectively. The characteristics of the spatial and temporal changes in landscape heritage in the park were also analyzed; this was based on drawings and old photos of the landscape heritage over the four periods, which were collected during the investigations, along with the policies and regulations related to these changes. Finally, a questionnaire survey on the conservation and utilization of landscape heritage was carried out. The questionnaire was divided into four parts, including a total of 12 questions, the main part of which was the users' evaluation of the importance, conservation, and utilization of each landscape heritage in the park. In addition, it also contained the basic information of the park users, their evaluation of the overall importance, conservation, and utilization of landscape heritage in the park, and the problems faced in the park's protection and utilization, as well as possible solutions. The importance of the park's landscape heritage and its conservation and utilization status were evaluated using a five-point Likert scale, which was divided into five grades: very poor, relatively poor, average, relatively good, and very good, represented by scores of 1 to 5, respectively. In order to facilitate the investigation and statistics, the same 44 types of landscape heritage were combined into one, e.g., Baiyun pavilion, antique pavilion (north), antique pavilion (south), and square pavilion were merged into pavilions. See Figure 2 for details. The 10 combined landscape heritages and 16 uncombined landscape heritages (26 in total) were used as the evaluation indicators of the questionnaire. A total of

160 copies were distributed, of which 135 were valid copies, meeting the requirement that the effective sample size should not be less than 132 (the daily number of visitors to the park was 200, the error level was 5%, and the confidence level was 95%). The Cronbach’s alpha coefficient of the reliability test was 0.960, indicating that it was reliable.

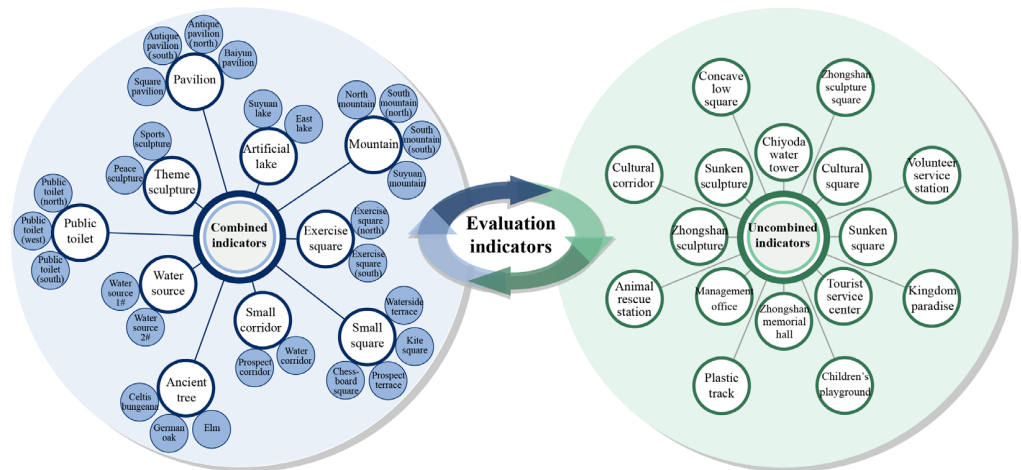


Figure 2. Overview of evaluation indicators for the survey questionnaire and IPA model.

Based on the survey data, an importance–performance analysis (IPA) model was built. The IPA (importance–performance analysis) method is a research method that ranks and analyzes the relevant attributes of service projects. The IPA method analyzes the attribute characteristics of the same participating elements from two perspectives: firstly, it analyzes the differences in the status and actual perception of each research element in the minds of recreational objects; secondly, it analyzes the distribution orientation of each research element in a four-quadrant diagram (Figure 3) and then studies its attribute characteristics.

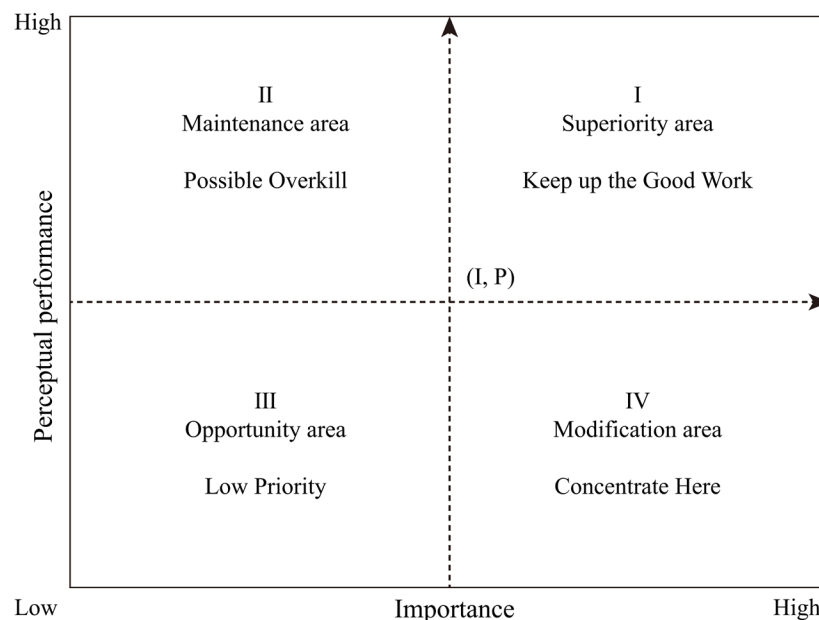


Figure 3. IPA matrix analysis schematic diagram.

This study constructed a research framework from two aspects of the importance of park landscape heritage and its conservation and utilization, including five parts: (1) Determine evaluation indicators through literature review, on-site research, and other methods. (2) Clarify the composition of the questionnaire and determine the assigned range of each

evaluation indicator. (3) Construct an IPA chart. According to the research results, the scores of each participating indicator were calculated, with importance as the horizontal axis (I-axis) and conservation and utilization as the vertical axis (P-axis). The average values of the horizontal and vertical axes were obtained as the intersection point (I, P) of the four-quadrant chart. (4) Locate the evaluation indicators; that is, determine their corresponding positions within the four quadrants. (5) Analyze the characteristics of indicators within the four quadrants as described in the research of Baloglu and Love [29].

3. Results and Discussion

3.1. Landscape Heritage Status of Zhongshan Park

Currently, there are a total of 44 landscape heritages in Zhongshan Park, including 15 historic sites, 20 cultural comprehensive sites, and 9 natural sites, with a total area of 58,712 m² (Figure 4). Among the existing landscape heritages, the construction ages of ten landscape heritages were more than 74 years, including three historic sites (i.e., Chiyoda water tower, sunken sculpture, and management office), three cultural comprehensive sites (i.e., water source 1#, sunken square, and cultural square), and four natural sites (*Celtis bungeana*, German oak, elm, and north mountain) (Figure 4a). The total area of the ten landscape heritages was 11,399 m², accounting for 22.73% and 19.42% of the total heritage amount and area, respectively. The ten landscape heritages were mainly distributed in the west of the park, which was related to the park's west gate as the main entrance during the Republic of China period [14,30]. The construction ages of two landscape heritages were between 44 and 74 years. Both were cultural comprehensive landscape heritages, with a total area of 2417 m² (Figure 4b). In the early period of New China, all landscape heritages were restored and rebuilt gradually, so only a few landscape heritages were formed during this period. The preference for urban construction and users at that time was reflected by the construction of the cultural corridor in the middle of the park and the water sources in the southeastern corner. The construction ages of 11 landscape heritages were between 22 and 44 years, including 7 historic sites (i.e., Zhongshan sculpture, peace sculpture, sports sculpture, Baiyun pavilion, antique pavilion (north), square pavilion, and public toilet (north)), 3 cultural comprehensive sites (i.e., Zhongshan sculpture square, exercise square (south), and exercise square (north)), and 1 natural site (south mountain (north)) (Figure 4c). The total area of these 11 landscape heritages was 12,422 m². The landscape heritage built in this period was mainly historic, accounting for 63.64% of the total increase. The newly added landscape heritages in this period were mainly located east of the park, which was related to the addition of the east gate as the main entrance after the reform and opening up. Thus, the focus of landscape construction was shifted to the east, which was reflected in the newly built Zhongshan statue square at the entrance of the eastern gate, the statue garden in the northeast, and the mountains and pavilions in the southeast. The landscape pattern of the mountains was formed, corresponding to the northwest and southeast. The construction ages of 21 landscape heritages were less than 22 years, including 5 historic sites, 12 cultural comprehensive sites, and 4 natural sites, with a total area of 32,474 m² (Figure 4d). Landscape construction tended to be completed in the middle of the park in the period. The newly built landscapes, mainly consisting of the sports square and children's playground, were mostly located around the corners, emphasizing the leisure and entertainment functions.

Among the 44 landscape heritages, cultural comprehensive landscape heritages had the largest number and area. The landscape heritages with construction ages of more than 74 years were symbolic of the park's history. The landscape heritages with construction ages between 22 and 44 years reflected the theme of Zhongshan culture in the park. The landscape heritages with construction ages of less than 22 years reflected the weakening of historical and cultural values caused by diversified construction. These findings are similar to those of previous studies. Due to the weak awareness of managers in conserving the historical and cultural heritage of modern urban parks during urban development, unreasonable planning and utilization led to the extinction of modern urban parks such

as Tokyo Motomati Park and Hokkaido Muroran Park [31,32]. This result indicates the importance of highlighting the historical and cultural significance of modern urban park management for the survival and sustainable development of parks.

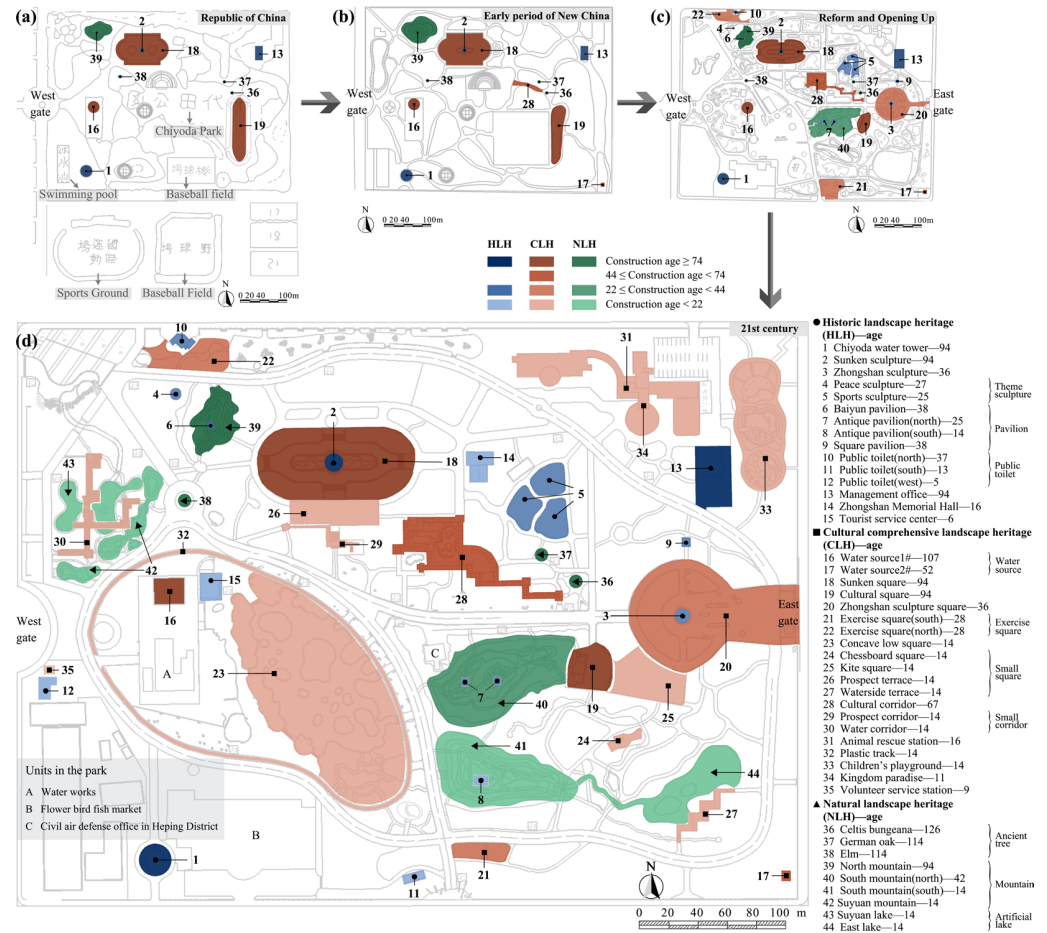


Figure 4. Spatial distribution of landscape heritages in Zhongshan Park. HLH: historic landscape heritage, CLH: cultural comprehensive landscape heritage, NLH: natural landscape heritage. (a) Republic of China period; (b) early period of New China; (c) reform and opening up period; (d) 21st century period.

3.2. Changes in the Landscape Heritage Conservation System

The analysis of the relevant laws and regulations of modern landscape heritage showed that the national and local policies and regulations corresponding to the historic landscape heritage were mainly focused on conserving cultural relics. Cultural comprehensive landscape heritages were mainly managed for the city’s appearance, such as the greenery and water supply. The natural landscape heritages were mainly involved in conserving ancient trees and ecological redline planning (Figure 5).

Currently, only 6 sites of the total 44 landscape heritages in the park have been designated for conservation, including the Chiyoda water tower, water sources, and ancient trees. The conservation of these six sites corresponded to the respective laws on the conservation of cultural relics, provisions on the conservation of water source areas, and measures for the conservation and management of ancient trees. The Chiyoda water tower (t-94 years) had its service discontinued in 1962 and has had no new use or function in its material life for the past 60 years (1962–2022). It was designated as a municipal cultural relic for conservation in Shenyang in 2008. As for details on the water source areas, well 1# (t-103 years) initially shared its function as an urban water supply with the Chiyoda water tower, and well 2# (t-48 years) was built in the 1970s. These two water sources are currently

divided into primary and secondary protected areas. The three ancient trees ($t > 100$ years) reflect the regional characteristics of urban greening and had their conservation level set at national level three in 2008 (Figure 6).

	Historic Landscape Heritage	Cultural Comprehensive Landscape Heritage	Natural Landscape Heritage
1930s	○ Antiques Preservation Law 1930		Paradigm
1940s			Policies+Issuing Date
1950s	○ Instructions on the Protection of Historic Buildings 1950		★ Local Policies
1960s	○ Provisional Regulations on the Protection and Control of Cultural Relics 1961		○ Annulled Policies
1970s	○ Notice on Further Strengthening the Protection of Ancient Kiln Sites 1973		□ The corresponding scope between policies and historic, cultural and natural landscape
1980s	○ Cultural Relics Protection Law of PRC 1982 ○ Town Planning Ordinance 1984 ★ Measures of Liaoning Province on the Implementation of the Cultural Relics Protection Law of PRC 1982	▽ ▽	▷ ▷ Corresponding relation
1990s		○ Urban Planning Law of PRC 1989	★ Technical Regulations for Maintenance and Management of Garden Trees (Liaoning) 1988
		Urban Greening Ordinance 1992	
		Urban Appearance and Environmental Sanitation Management Regulations 1992	
		Urban Water Supply Regulations 1994	
			★ Provisions on the Administration of Shenyang Water Source Protection Area 1997
2000s	Cultural Relics Protection Law of PRC (Increase Modern City Heritage) 2002	▽	Notice on the Issuance of Measures for the Protection and Administration of Urban Ancient and Rare Trees 2000
	○ ★ Urban Greening Regulations in Shenyang 2002	▽	★ Regulations on the Protection of Groundwater Resources in Liaoning Province 2003
	★ Provisions on Management of Urban Appearance and Environmental Sanitation in Liaoning Province 2004		★ Landscaping Maintenance Quality Standards and Operating Regulations in Shenyang 2005
	★ Regulations on the Protection of Above-ground Immovable Cultural Relics and Underground Cultural Relics in Shenyang 2005		★ Provisions on the Administration of Urban Water Supply and Use in Shenyang 2006
	Notice of the State Council on Strengthening the Protection of Cultural Heritage 2005		Technical Specifications for the Division of Drinking Water Source Protection Areas 2007
	★ Notice of the People's Government of Liaoning Province on Strengthening the Protection of Cultural Heritage 2006		
	Urban and Rural Planning Law of PRC 2008	▽	
	Regulations on the Protection of Famous Historical and Cultural Cities, Towns and Villages 2008		
	★ Regulations on the Protection of Shenyang Famous Historical and Cultural City 2009		
2010s		▽	
		★ Greening Regulations in Shenyang 2010	★ Reply on the Plan for the Division of Drinking Water Source Protection Areas in Shenyang 2010
		★ Regulations on the Administration of Urban Appearance and Environmental Sanitation in Shenyang 2011	★ Technical Report on the Division of Drinking Water Source Protection Areas in Shenyang 2010
			★ Measures for the Management of the Red Line of Ecological Protection in Shenyang 2015

Figure 5. Changes in laws and regulations related to historic, cultural comprehensive, and natural landscape heritages in Shenyang.

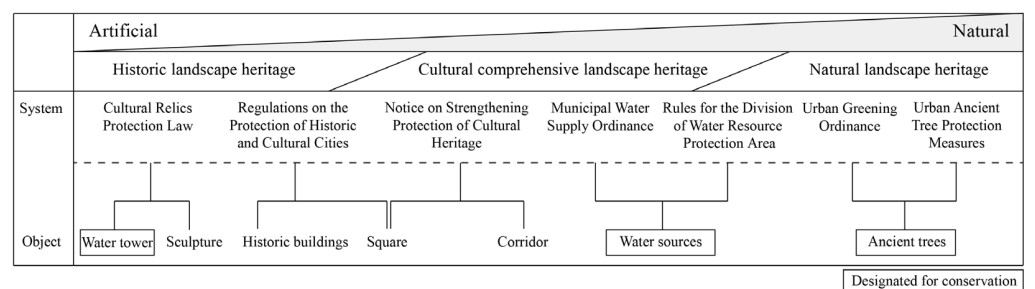


Figure 6. The relationships between landscape heritages in Zhongshan Park and laws and regulations.

The remaining 38 landscape heritages, which have not been designated for conservation, include five sites that were constructed over 50 years ago, including the sunken sculpture ($t-90$ years), management office ($t-90$ years), sunken square ($t-90$ years), cultural square ($t-90$ years), and cultural corridor ($t-63$ years). These landscape heritages have experienced changes during three or more periods and have conformed to the requirements of the Law for Cultural Relics Conservation, the Regulations on Historical and Cultural City Conservation, and the Policies for Heritage Conservation. Three other landscape heritages, namely, Zhongshan sculpture square ($t-32$ years), Zhongshan sculpture ($t-32$ years), and

Zhongshan Memorial Hall (t-12 years), were constructed more recently; however, they fit the theme of Zhongshan culture in the park. Therefore, these three landscape heritages should be regarded as follow-up heritage resources and designated as landscape heritages together with the five aforementioned landscape heritages. All eight of the landscape heritages should become the focus of future conservation and development in the park.

3.3. Conservation and Utilization Evaluation

3.3.1. Conservation Evaluation

According to the survey statistics and scores (five-point Likert scale method), the mean importance value and conservation situation of all evaluation indicators were 4.21 and 3.50, respectively. This shows that the users had a high evaluation of the importance and a moderate evaluation of the conservation situation for landscape heritage. With the importance value as the horizontal axis, the conservation situation value as the vertical axis, and the mean values of importance (4.21) and conservation situation (3.50) as the intersection, all of the evaluation indicators corresponded within the IPA four-quadrant diagram (Figure 7).

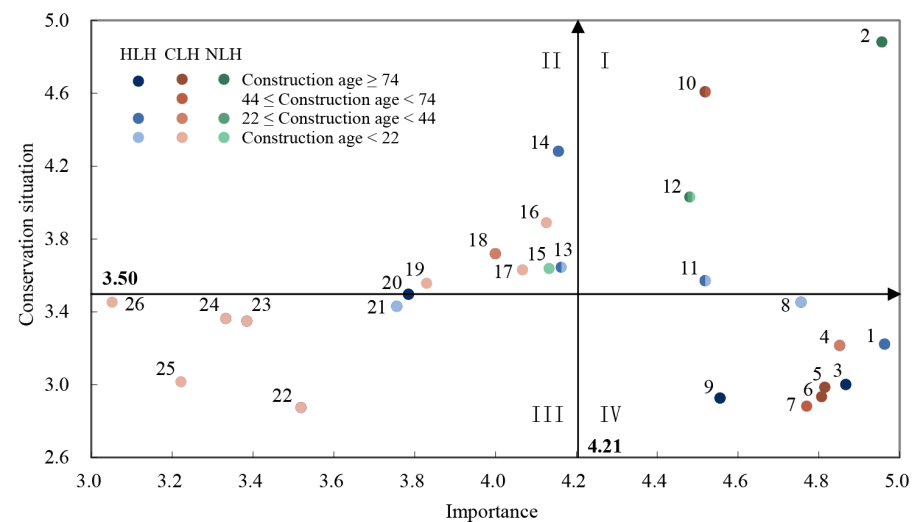


Figure 7. The IPA four-quadrant diagram of the importance and conservation situation of landscape heritage (ordinal numbers corresponding to the level of importance)—1: Zhongshan sculpture, 2: ancient trees, 3: sunken sculpture, 4: Zhongshan sculpture square, 5: sunken square, 6: cultural square, 7: cultural corridor, 8: Zhongshan Memorial Hall, 9: Chiyoda water tower, 10: water sources, 11: pavilions, 12: mountain, 13: public toilet, 14: theme statue, 15: artificial lake, 16: concave low square, 17: plastic track, 18: exercise square, 19: children’s playground, 20: management office, 21: tourist service center, 22: kingdom paradise, 23: volunteer service station, 24: small square, 25: small corridor, 26: animal rescue station. HLH: historic landscape heritage, CLH: cultural comprehensive landscape heritage, NLH: natural landscape heritage. I: the first quadrant; II: the second quadrant; III: the third quadrant; IV: the fourth quadrant.

In the first quadrant (Superiority area), the evaluations of the importance and conservation situation were relatively high. Ancient trees and water sources had been conserved by laws and regulations in this area, and their conservation situations were better than those of other landscape heritages. In the second quadrant (Maintenance area), the importance evaluation was low, while the conservation situation evaluation was high. All landscape heritages in this area were the basic service facilities in the park. The third quadrant (Opportunity area) was where the evaluations of the importance and conservation situation were low. In this area, the historic landscape heritages were mainly management facilities with a low opening rate. The cultural comprehensive landscape heritages were mostly the entertainment areas added in the 21st century. The fourth quadrant (Modification area) was where the importance evaluation was high while the conservation situation evaluation

was low. In this area, the landscape heritages with the longest construction age and most representative historical value, including sunken sculpture, Chiyoda water tower, cultural corridor, etc., should be the focus of future conservation in the park (Table 1). This result is consistent with the relevant research on the conservation of landscape heritage in modern urban parks, which also mentioned the important value of conserving and continuing the history and culture of park [33,34].

Table 1. Distribution of the conservation and utilization of landscape heritages in the IPA four-quadrant diagram (ordinal numbers corresponding to the levels of importance in Figures 7 and 8).

Quadrant	Landscape Heritage Type	Order Number of Importance of Landscape Heritages	
		Conservation	Utilization
I Superiority area	HLH ¹	11	1, 3, 8, 11
	CLH ²	10	4, 5, 6, 7
	NLH ³	2, 12	2, 12
II Maintenance area	HLH	13, 14	13, 14
	CLH	16, 17, 18, 19	16, 17, 18, 19
III Opportunity area	NLH	15	15
	HLH	20, 21	20, 21
IV Modification area	CLH	22, 23, 24, 25, 26	22, 23, 24, 25, 26
	HLH	1, 3, 8, 9	9
	CLH	4, 5, 6, 7	10

¹ Historic landscape heritage. ² Cultural comprehensive landscape heritage. ³ Natural landscape heritage.

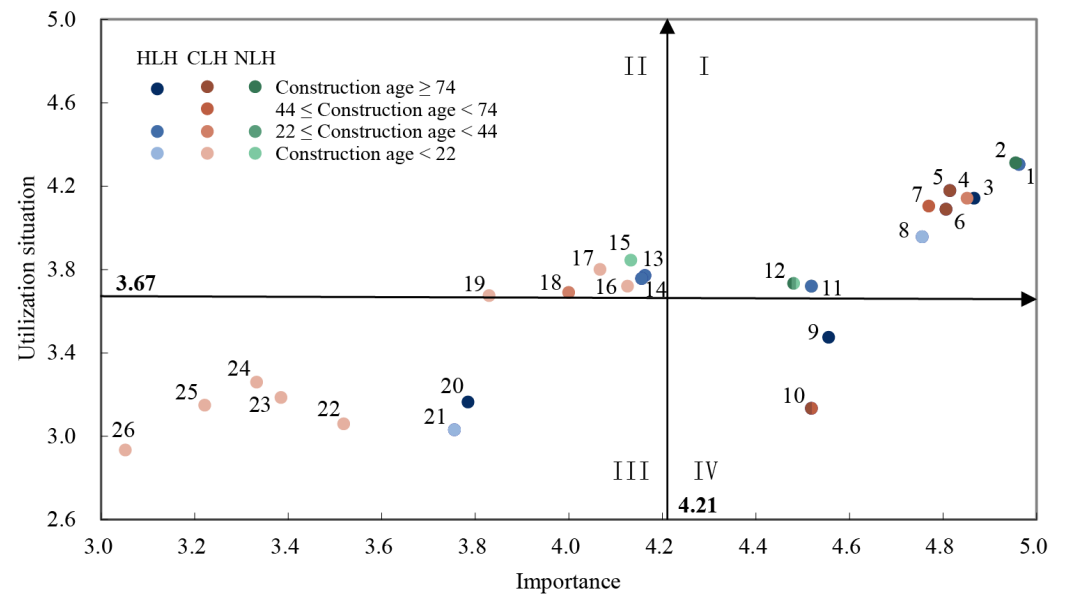


Figure 8. The IPA four-quadrant diagram of the importance and utilization situation of landscape heritage (ordinal numbers corresponding to the levels of importance)—1: Zhongshan sculpture, 2: ancient trees, 3: sunken sculpture, 4: Zhongshan sculpture square, 5: sunken square, 6: cultural square, 7: cultural corridor, 8: Zhongshan Memorial Hall, 9: Chiyoda water tower, 10: water sources, 11: pavilions, 12: mountain, 13: public toilet, 14: theme statue, 15: artificial lake, 16: concave low square, 17: plastic track, 18: exercise square, 19: children’s playground, 20: management office, 21: tourist service center, 22: kingdom paradise, 23: volunteer service station, 24: small square, 25: small corridor, 26: animal rescue station. HLH: historic landscape heritage, CLH: cultural comprehensive landscape heritage, NLH: natural landscape heritage. I: the first quadrant; II: the second quadrant; III: the third quadrant; IV: the fourth quadrant.

3.3.2. Utilization Evaluation

The mean value of the utilization situation of all evaluation indicators was 3.67, indicating that the utilization situation of landscape heritages was relatively better evaluated by the users. Taking the mean value of importance as the horizontal axis, the mean value of the utilization situation as the vertical axis, and the mean values of importance (4.21) and utilization situation (3.67) as the intersection, all evaluation indicators corresponded within the IPA four-quadrant diagram (Figure 8).

The first quadrant (Superiority area) showed that the utilization situations of the ancient trees, sunken sculpture, cultural corridor, Zhongshan sculpture, and Zhongshan Memorial Hall were relatively good. The squares and mountain also had higher levels of utilization. The distributions of landscape heritages in the second and third quadrants were consistent with the conservation evaluation. The Chiyoda water tower and water sources were distributed in the fourth quadrant (Modification area). These two landscape heritages had been designated for conservation and had important historical and cultural values as iconic structures and urban water conservation sites in the park, but their current utilization was poor (Table 1). This result is consistent with Zheng Xu's research on the conservation and utilization of landscape heritage in Chongqing Eling Park, which also found that the historic landscape (such as the Tomb of the Martyrs of the Revolution of 1911, etc.) has high value but is in a poor state of protection and utilization [34].

3.3.3. Comprehensive Evaluation

From the comparative analysis of conservation and utilization, the conservation situation of landscape heritage was consistent with its utilization situation when its importance was low. The conservation and utilization of landscape heritage showed opposite trends, except for the Chiyoda water tower, ancient trees, pavilions, and mountain when the importance of landscape heritage was high. The conservation and utilization of the ancient trees, pavilions, and mountain were good, while those of Chiyoda water tower were the opposite. This is because the ancient trees were landscape heritage designated for conservation, and they were spatially dependent on the pavilions, mountain, and other places. Thus, the conservation and utilization of such landscape heritage were good. Chiyoda water tower has not been given new functions since it was discontinued in the 1960s. Although it is now a municipal cultural relic protection unit, no effective protection measures or reasonable development and utilization have been implemented. In addition, the water sources designated for conservation were in a state of high conservation and low utilization. Zhongshan sculpture, sunken sculpture, Zhongshan Memorial Hall, Zhongshan sculpture square, sunken square, cultural square, cultural corridor, etc., were in a state of high utilization and low conservation. They had not yet become the designated landscape heritages. The reason for the difference between conservation and utilization was that the relative closeness of the water source significantly reduced the open utilization rate. The square, sculpture, and corridor had strong space accommodation, which improved their utilization rate. However, the users had weak awareness of conserving their landscape heritage values due to the lack of management and legal protection.

In the comprehensive evaluation of the importance, conservation, and utilization situation of all landscape heritages, the sum of the mean value of the three was 11.37. The values of 17 indicators were higher than this mean value, including 31 landscape heritages, accounting for 70.45% of the total number of landscape heritages (Figure 9). Among them, the ancient trees and water sources designated for conservation had the highest evaluation values, followed by Zhongshan sculpture, Zhongshan sculpture Square, and Zhongshan Memorial Hall. The conservation of the sunken sculpture, sunken square, cultural square, and cultural corridor was weaker than their importance and utilization. The evaluation values of nine indicators were lower than this mean value. The Chiyoda water tower was designated for conservation as it had a higher importance value, but its conservation and utilization evaluation values were far lower than those of the ancient trees and water sources. Additionally, the management office had higher importance and historical and

cultural values, but its current conservation and utilization evaluations were low. The remaining 11 landscape heritages were built in the past ten years, with low importance and poor conservation and utilization evaluations.

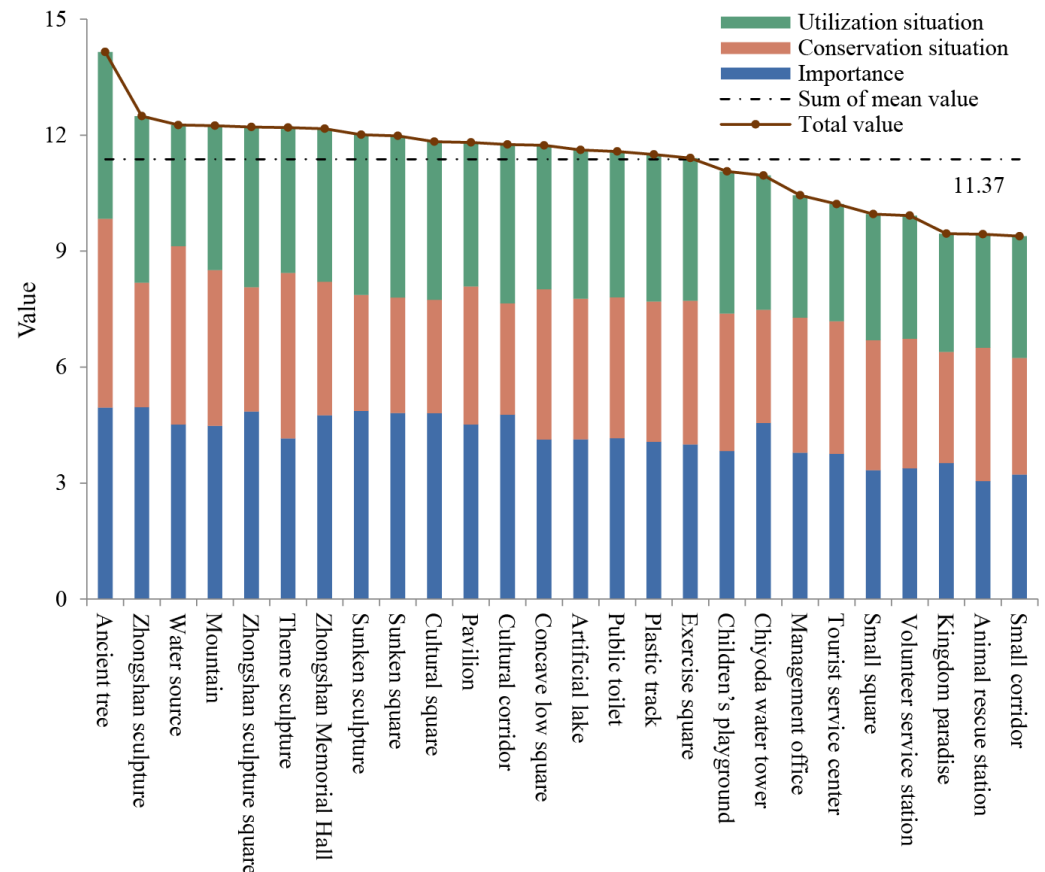


Figure 9. Comprehensive analysis of the importance and the conservation and utilization situations of landscape heritages.

Therefore, based on the analysis of the current status and the conservation and utilization evaluations, the landscape heritages were further divided into three subcategories, i.e., already designated for conservation (ADC), should be designated for conservation (SDC), and should be restricted scale (SRS). Among them, (1) ADC includes six sites, including the Chiyoda water tower, water sources (two), and ancient trees (three). The Chiyoda water tower has been identified as a municipal cultural relic conservation unit, but it has not received the attention of effective conservation measures in accordance with the Cultural Relics Conservation Law, nor has it been endowed with a new use function after its role as a water supply was discontinued. The water sources have a better conservation situation. The management of the primary and secondary conservation areas essentially conformed to the relevant requirements of the Regulations on Administration of Urban Water Supply and Use and the Provisions on Administration of the Water Sources Conservation Areas in Shenyang. However, their utilization situations were poor, due to their relative closeness. The ancient trees have been provided with tree pools and fences as basic conservation facilities, so they have been managed well. (2) SDC includes eight sites, i.e., sunken sculpture, Zhongsan sculpture, Zhongsan Memorial Hall, management office, sunken square, cultural square, Zhongsan sculpture square, and cultural corridor. The importance evaluations of these landscape heritages were higher than the mean value (4.21) of all landscape heritages, while the conservation situation evaluations were lower than the mean value (3.50). In terms of conservation, the historical and cultural values of these eight landscape heritages have not been appropriately evaluated, and there is a lack

of effective conservation policies. Furthermore, managers and residents lacked awareness of conservation. In terms of utilization, the squares and corridors are not only important places for users' leisure and entertainment purposes but also the main venues for holding various activities, such as the opening days of various government affairs, community performances, and various flower exhibitions. However, the utilization forms combined with the historical and cultural characteristics of the park are few, and no special activities with "Zhongshan culture" as the theme have been launched. (3) SRS includes 11 sites, most of which are small, fragmented, and recreational cultural comprehensive landscape heritages. They were mostly built after the year 2000. They have a low correlation with the historical and cultural values (i.e., core themes) of landscape heritages in the park and tend to weaken the core themes.

Therefore, it is necessary to moderately improve the utilization efficiency of ADC in the future, clarify the system conservation of SDC as soon as possible, and enhance the management intensity of SRS. Moreover, the characteristic utilization activities combined with the historical and cultural value of SDC should be carried out, and the construction scale of SRS should be controlled. In addition, 19 landscape heritages, such as pavilions, theme sculptures, sports squares, etc., have been designated as follow-up heritage resources. Due to their short construction ages and the lack of relevant laws and regulations on urban parks, they need to be classified into SDC or SRS according to their degree of matching with the protection system and park theme in the future.

4. Conclusions

In this paper, the current status and the changing characteristics of historic, cultural comprehensive, and natural landscape heritages, along with relevant policies and regulations, were analyzed. The IPA model was used to evaluate the conservation and utilization of landscape heritage, and finally, the landscape heritage was further divided into three subcategories, i.e., ADC, SDC, and SRS. This study provides a clear development strategy for modern urban parks from the perspective of conservation and utilization of landscape heritage, striving to evoke universal resonance in the field of landscape architecture heritage conservation. The results of this research can provide reference value for the conservation and evaluation of historical landscapes in historical modern urban parks, and the methods of landscape heritage conservation and utilization considered in this study can serve as a reference example for the sustainable development of other historical modern urban parks internationally.

There are 44 existing landscape heritages in Zhongshan Park, mainly cultural comprehensive landscape heritage. The landscape heritages constructed over 74 years accounted for 22.73% and 19.42% of the total number and area of the heritages, among which only the Chiyoda water tower, water sources, and ancient trees were conserved by relevant protection systems. The sunken sculpture, management office, sunken square, cultural square, and cultural corridor have been built for over 50 years and are still under extensive management. From the evaluation of conservation and utilization, most of the landscape heritages with high importance, poor conservation, and high utilization had the characteristics of long construction ages or were related to Zhongshan culture. These will comprise the core of the conservation and utilization of the landscape heritage of the park in the future. Clear laws and regulations should be formulated to carry out targeted protection. Therefore, in this study, landscape heritage was further subdivided into three subcategories (i.e., ADC, SDC, and SRS). Among them, the SDC should be protected by the relevant laws and regulations as soon as possible and used to carry out characteristic activities to highlight the historical and cultural values of the park. Moreover, SRS should be effectively limited to construction to highlight the historical and cultural core of the park.

This study also has some limitations. The development countermeasures for conserving and utilizing landscape heritages in Zhongshan Park are representative. These can provide a reference for other modern urban parks that have a background of foreign cultural colonization, existing heritages with higher value, or limitations on conservation

and utilization internationally. However, this paper has not systematically studied the impact of foreign culture on modern gardens, as well as the similarities and differences between modern urban parks in different regions, with different builders, or in different stages of formation. There was also no consideration of suburban parks. Future research on these aspects should be carried out to perfect the development of strategies for the conservation and utilization of the landscape heritages of modern urban parks.

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