

Preliminary study on the preserved trees in the central part of Himeji city and *Syosya-zan Engyo-ji* in terms of civil consciousness

Fumikazu ICHIMINAMI *, Yukiko NOGUCHI **,
Meltem Okur DINÇSOY *** and Enver Erdiñç DINÇSOY ****

This study investigated the civil consciousness on the preserved trees in Himeji city, Hyogo prefecture. We conducted data collection in the city hall, observed preserved trees, and examined the awareness of citizens against the preserved trees in the central area and *Syosya-zan Engyo-ji*. As a result, it was revealed that the citizens are not indifferent to the natural environment of trees, etc., they also do not have a strong interest in it in particular. As for preserved tree system, there were some slight differences in the recognition between the people who actually take care of trees and administration. People are in favor of the need for the current system of preserved trees. However, in Japan, which is blessed with many things, people do not recognize strongly appreciating the natural environment.

Key words; *preserved tree, ordinance, civil consciousness, Himeji city*

1 INTRODUCTION

Since most Japan belongs to the Temperate Zone, forest area occupies about 2/3 of area of Japan. Japan is generally blessed with the natural environment which consists of vegetation, a water area, etc. Various vegetation and natural environment bring about grace and calmness, when man leads a comfortable life, and they have an effect of raising the quality of a scene. The green tract of land is covered with green, such as trees, a grass plant and the like, and includes a park, a forest, farmland, etc. However, in the central part of city in which many people reside, since there is generally little green tract of land area as compared with a road or a building, preservation of green natural environment should be respected. The green tract of land has various functions, such as environmental preservation, a recreation, disaster prevention, and landscape formation (Maruta and Yanai, 1995)¹⁾. However, in order to form a more attractive city, it is possible to utilize the trees which have presence as a

landmark. The reason for selection of trees is as follows. Generally the form and the height of trees are large as compared with a grass plant. Moreover, the influence on vision and a scene is great, and the life of trees is long.

Although there were not many previous researches on the functions and landscapes of the forest and trees in the city, Hashizume (1995)²⁾ and Aoshima et al. (2010)³⁾ examined carefully the policy and residents' consciousness on the preservation and management of a forest in the Kanto district. Moreover, Nakajima (1986)⁴⁾ and Setsu et al. (1995)⁵⁾ investigated in detail the significance of the conservation of the preserved tree in the context of the landscape and the like. However, there are not so many research examples on the natural environment in urban areas, including forest trees. Hence, it is necessary to examine in light of the natural environment in general in the city when we create a city unique. For this purpose, the accumulation of a certain amount of research is required.

Our present study has focused on Himeji city⁽¹⁾ as a field study and we have studied both the preserved trees in the central part (the region close to Himeji Castle) of Himeji city and a thousand-year-old cedar northwest of the city. The research purpose is to consider the present conditions, significance and challenges. We conducted interviews and data collection in the city hall including the observation of preserved trees, the interviews in the vicinity, and a questionnaire survey about

* Faculty of Environmental Science and Technology, Okayama University

** JA Hyogo Informatin Center

*** Faculty of Economics and Administrative Sciences, Trakya University

**** Department of Banking, School of Applied Sciences, Trakya University

preserved tree for the residents. We also questioned the significance of preserved trees and the challenges in helping to preserve them.

2 PRESERVED TREES AND THE POLICY FOR THE NATURAL ENVIRONMENT IN HIMEJI CITY

There are local regulations and laws relating to preservation of trees in order to maintain the Scenic Beauty of the city in preserved tree, preservation forest, and the hedge in Japan, the number of preserved tree is overwhelmingly in any case (**Table 1**). **Fig. 1** shows the number of trees saved by prefecture. The number of preserved trees is very large in Tokyo, but those of four metropolitan areas, including the Kanto region is also large. In Hyogo prefecture, the first most preservation trees are in Nishinomiya city and the second most in Himeji city (**Table 2**). Then, the number of preserved trees by municipality based on the ordinance is extraordinarily large in Chofu city (4,911), Ogaki city (2,336), Fuchu city (2,191), Akita city (1,967), Setagaya Ward (1,809), Sugunami Ward (1,744), and Itabashi Ward (1,696), and the like.

Table 1 Number of preservation tree, preservation forest, and the hedge in Japan

	Preservation tree	Preservation forest	Hedge
Japanese Law	3,814	228	
Ordinance	66,775	8,417	6,577

Source; the Ministry of Land, Infrastructure and Transport in Japan, the data of March 31, 2012

Population of Himeji city, which is located in the southwestern part of Hyogo prefecture, is about 530,000 people in 2014. In the city, Himeji Castle is repaired as a part of the greening plan of built-up area, street trees and city park with a focus on Himeji Station, and the symbol of the green area has been enrich. Nature Conservation Council in Himeji city had been held annually since 1965, but after it is determined in 1994 that it has finished specifying the important trees in the city, it has not been held for a long time. However, through the

municipal mergers in 2006, 2013 or later, the council has been resumed.

Preserved tree system is a business to conserve the green environment. In order to continue to save the precious trees and forests, this system has implemented an auxiliary to the administrator of the preserved tree (**Fig. 2**). Nature conservation ordinance was enacted in 1971 in Himeji city, 101 preserved trees, seven forests, and six rows of trees are currently specified. Most of preservation trees are old trees and huge trees in temples and *Shinto* shrines. These are mainly distributed both from the center of built-up area to the northwest valley area and over the East-West directions along a coastal place of the Seto Inland Sea.

The numerical distribution of preserved tree and others by organizations or individuals to manage is 63 (55%) in temples and shrines, 23 (20%) in city, 18 (16%) in residents' association, and 10 (9%) in the individual, respectively. The tree species of preserved tree, *Celtis sinensis* and camphor tree is particularly large and the number of *Aphananthe aspera* and *Cryptomeria japonica* is large, too (**Table 3**). 3,000 yen of subsidy has been paid to management of preserved tree during one year ⁽²⁾.

Table 2 Number of trees to be saved in Hyogo prefecture

City or town	Number of trees to be saved
Kobe	56
Himeji	101
Amagasaki	65
Akashi	6
Nishinomiya	161
Ashiya	16
Itami	36
Takarazuka	30
Takasago	19
Ono	21
Tatsuno	1
Fukusaki	20

Source; the Ministry of Land, Infrastructure and Transport in Japan, the data of March 31, 2012

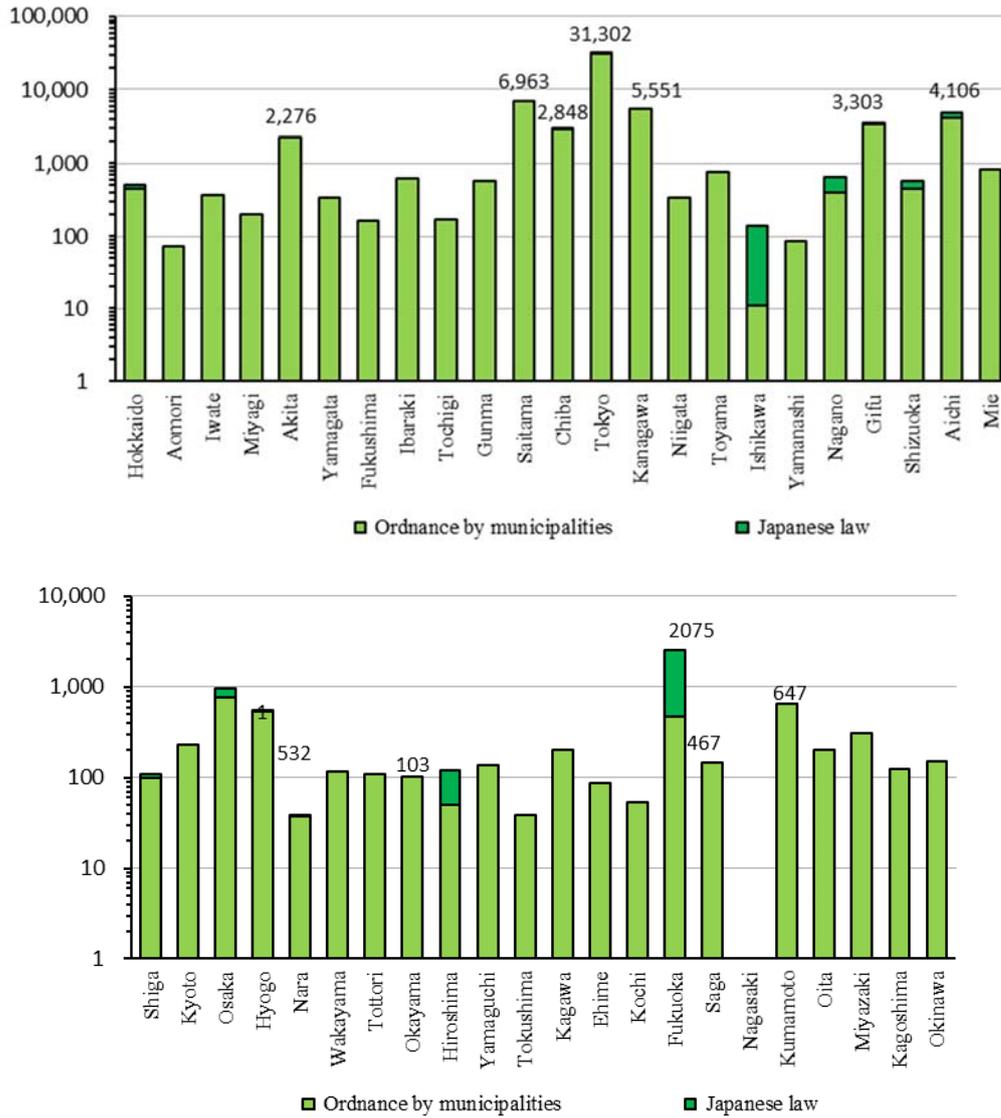


Fig. 1 Number of trees to be saved by prefecture in Japan

Source; the Ministry of Land, Infrastructure and Transport in Japan the data of March 31, 2012



Fig. 2 The signboard of the preserved tree (specification number 9) photographed by the author

Table 3 Ranking of the number of the species of preserved trees

Rank	Species	Number of trees
1	<i>Cinnamomum camphora</i> (camphor tree)	17
2	<i>Celtis sinensis</i>	13
3	<i>Aphananthe aspera</i> , <i>Cryptomeria japonica</i>	8
4	<i>Zelkova serrata</i>	6
5	<i>Quercus glauca</i>	5
6	<i>Ginkgo biloba</i> , <i>Ilex rotunda</i> , <i>Juniperus chinensis</i>	4
7	<i>Torreya nucifera</i>	3
8	<i>Abies firma</i> (the momi fir), <i>Ulmus parvifolia</i> , <i>Acer palmatum</i>	2
9	<i>Quercus variabilis</i> , <i>Castanopsis sieboldii</i> , <i>Michelia compressa</i> , persimmon (sharon fruit), <i>Litsea lancifolia</i> , <i>Quercus acutissima</i> , <i>Vaccinium bracteatum</i> , <i>Machilus thunbergii</i> , <i>Tsuga sieboldii</i> , <i>Camellia japonica</i> , <i>Acer buergerianum</i> , <i>Yulan magnolia</i> , <i>Sapindus mukorossi</i> , <i>Acer palmatum</i> , <i>Eucalyptus</i> , <i>Liriodendron tulipifera</i>	1

Source; Map of preserved trees in Himeji city (excluding the forest and tree-lined)

3 CIVIL CONSCIOUSNESS ON THE PRESERVED TREES

The authors asked about the relation with the preserved trees and the evaluation for six preserved trees ⁽³⁾ at the central part (**Fig. 3**) of Himeji city and one preserved tree in *Syosya-zan Engyo-ji*.

The author visited 137 households to live within a radius of approximately 200m of the tree from October, 2012 through December and got the answer of 104 people. The answer rate was approximately 76%. We used poste restante, a mailing method of the answer paper together with the direct interview method as an investigation method. The age group was distributed approximately thoroughly from 20 generations to 80 generations.

3.1 Preservation trees in the central part of Himeji city

Fig. 4 is a sample of preserved trees of the central part of Himeji city, and shows *Cinnamomum camphora* in the Johoku elementary school whose height is about 20m, is specified in February 1974. The residents responded for not all of 6 preserved trees but only one of the familiar preserved trees. Initially, we visualized and compared one by one the frequency structure of the question for each item. However, because there was no significant difference, we will explain the entire result in the following. 86% of respondents are aware of the existence of a familiar preserved tree and 69 percent had recognized that it is a

preserved tree. We asked the five-step evaluation ⁽⁴⁾ on the effect of preserved tree.

When arranged in descending order the mean and standard deviation, it is followed by the creation of shade (mean 4.29, standard deviation 0.84). Even below are the same as the order in parentheses), landscape (3.80, 0.99), landmark (3.76, 1.02), wild birds come (3.70, 0.99), cleaning of air (3.53, 0.95), windbreak (3.08, 0.71), and noise suppression (2.82, 0.93), it generally has a good reputation (**Fig. 5**).

For the troubles in the presence or impression of preserved tree, there was no significant difference among deciduous trees such as *Aphananthe aspera* and *Celtis sinensis* and evergreen trees such as *Cinnamomum Camphora* and *Cryptomeria Japonica*.

For the impression of preserved trees, the answers of good impression such as sense of years (4.46, 0.81), strong and large (4.41, 0.85), symbolic value (4.00, 1.06), calm (3.84, 0.94), etc. was ranked high. There were also negative answers such as dark feeling (2.23, 0.99), creepy (2.22, 0.94), and hindrance (2.09, 1.05), but they accounted for lower (**Fig. 6**). Moreover, in what trouble to save trees, there were the responses, such as fall of a leaf and the branch (3.67, 1.35), fall of a big branch (2.76, 0.95), fall of bird feces (2.67, 1.09), creation of shade (2.64, 1.01), increase in pest (2.50, 1.01), and many were average of 3 or less (**Fig. 7**).

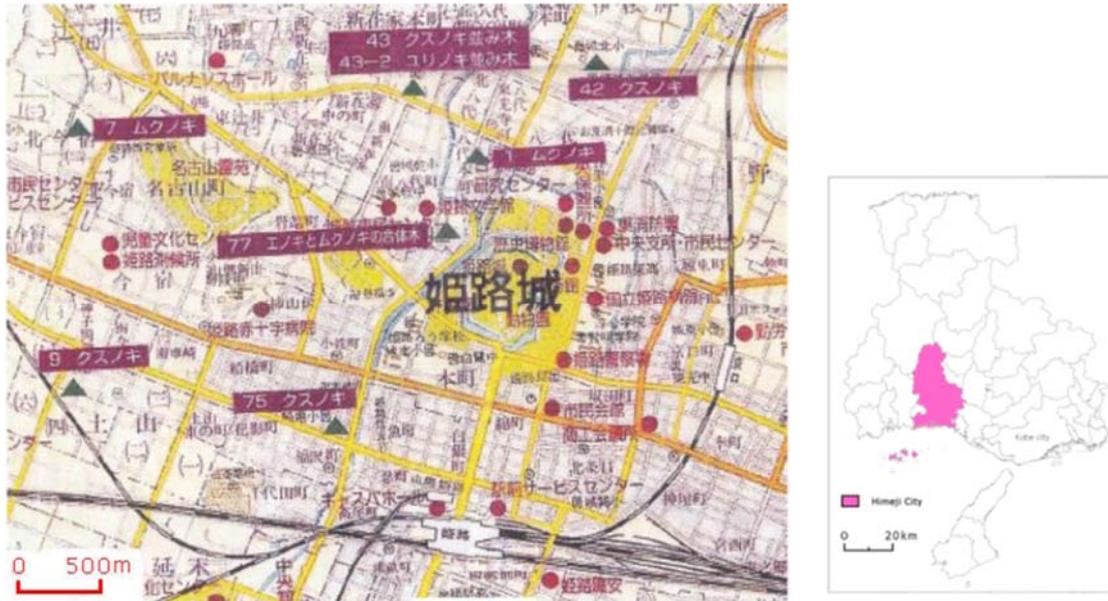


Fig. 3 Central part of Himeji city and the location of preservation trees

Source; Map of preserved trees in Himeji city



Fig. 4 *Cinnamomum camphora* in the Johoku elementary school photographed by the author

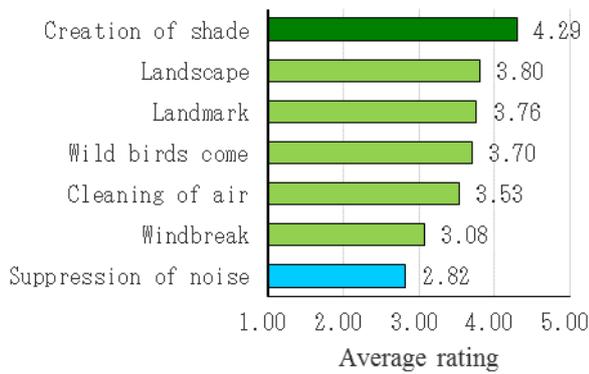


Fig. 5 Effect of the preservation trees in the central part of Himeji city (N=89)

Source; Questionnaire survey in 2012

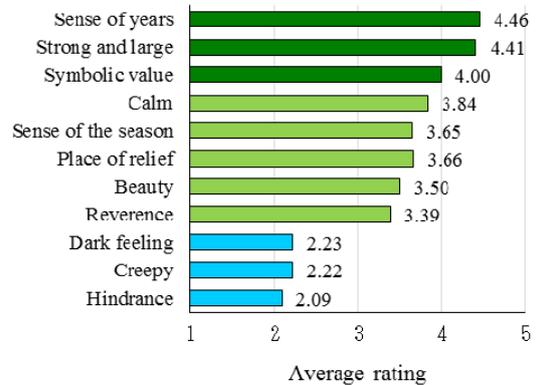


Fig. 6 Impression of the preservation trees in the central part of Himeji city (N=90)

Source; Questionnaire survey in 2012

Comprehensive assessment of a familiar preserved tree is as follows; Preservation of trees is necessary, not be annoying (73 %), preservation of trees is necessary, but in some cases you are annoying (22 %), it is preferable that there is no preserved tree (1 %), and others (4 %). Therefore, the system of preserved tree is generally understood in **Fig. 8**.

Preserved tree has become a symbol of the city, a large number of people are aware of their need for conservation. Much of what people feel annoying was deciduous, but there were also trees which residents' association and children board in the town have cleaned regularly. However, the number of people who know that there is a preserved tree system has remained at 54%.

Thus, preserved tree system has not been strong awareness on a daily basis.

In addition, the evaluation of the preserved tree system, opinions were divided as follows; Satisfied with the current situation (58 %), The hope to improve the current situation (22 %), Since it is annoying, I want you to abolish (0 %), Do not know (19 %), Others (1 %) (**Fig. 9**). There was something like the following in the opinion that you want to improve. "After the city designated a preserved tree, government should manage it on a regular basis", "Management expenses (subsidies) is insufficient", and "People want the city to compensate for the losses incurred by saving trees"

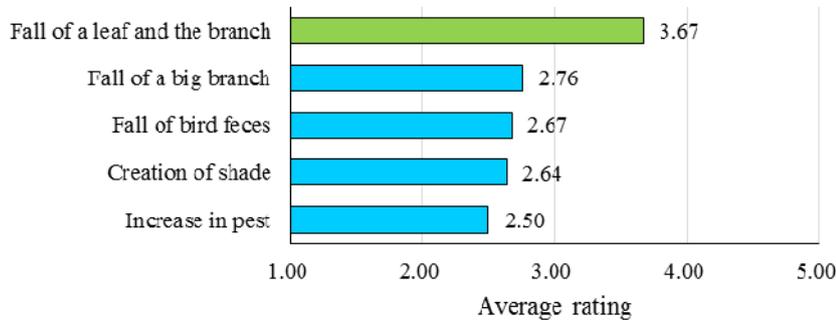


Fig. 7 Difficulties and concern over the preserved trees in the central part of Himeji city (N=89)
Source; Questionnaire survey in 2012

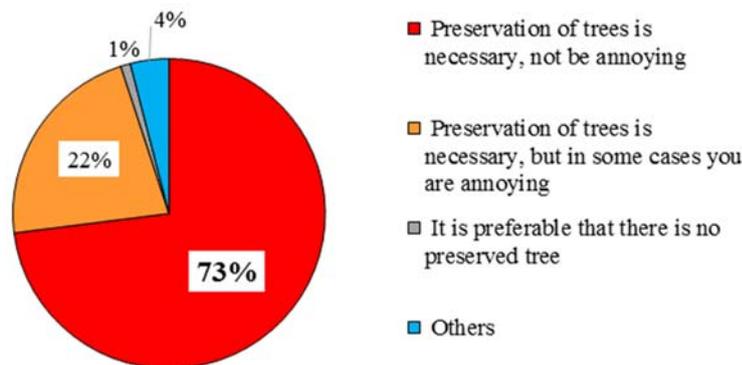


Fig. 8 Comprehensive evaluation of a familiar preserved tree (N=89)
Source; Questionnaire survey in 2012

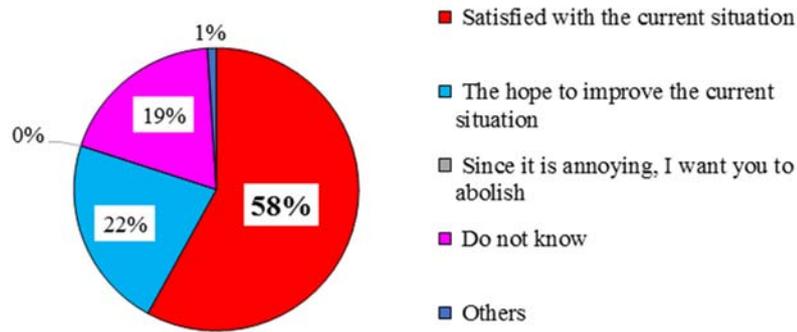


Fig. 9 Evaluation to the system of a preservation tree (N=95)

Source; Questionnaire survey in 2012

3.2 A thousand-year-old cedar (*Sennen-sugi*) in *Syosya-zan Engyo-ji*

Temple, *Syosya-zan Engyo-ji* is a famous tourist destination next to Himeji Castle as a World Heritage Site, the exceptional headquarters of the *Tendai-shu* which is one of groups of Buddhism, and the mountainous training field in which cedar forests are widely distributed, 12 of which have been specified as the preserved tree⁽⁵⁾. One of these is a thousand-year-old cedar (**Fig. 10**). A thousand-year-old cedar was designated as preserved tree in December 1972. It has been estimated that tree height is 35m, stem circumference is 8.4m, and age is 700 years.

Because the confectionery named after this tree has been produced and sold locally (**Fig. 11**), the authors expected that popularity is should be greater. However, the proportion of people who know a thousand-year-old cedar remains in 66%, and the proportion of people who know that a thousand-year-old cedar is preserved tree of Himeji city remained 59% in the present study. However, when we heard again the relationship between a thousand-year-old cedar, most citizens were aware of the cedar (**Fig. 12**).

Since *Syosya-zan Engyo-ji* is used in the open-air school of elementary school in Himeji, if a person has lived in Himeji from childhood, it is the place he or she might visited. From the above, a thousand-year-old cedar, *Sennen-sugi* is the symbol of *Syosya-zan* which is obvious to Himeji citizens, but the weakness of the interest in the preserved tree is revealed.

Next, we asked residents to be answered in 5-point scale for the impression of a thousand-year-old cedar (**Fig. 13**). For

impression of the cedar, the evaluation to be a large tree was remarkable, such as sense of years (mean 4.36, standard deviation 0.88) and strong and large (4.38, 0.85). Furthermore, symbolic value (3.89, 0.91), calm (3.68, 0.84), beauty (3.69, 0.84), place of relief (3.53, 0.92), etc. is followed. Since from ancient times, a thousand year-old cedar is standing like tower in the mountains that was dense and the temple, *Syosya-zan Engyo-ji* has been the training field of religion, it would lead to "a sense of awe." However, in general, there was no significant difference between the impression of preserved tree in the central part of the city and the one of a thousand-year-old cedar.

In addition, we could question its reality to five administrators of preserved tree. Among them, there was the opinion after the government has designated a preserved tree, with too much left to the owner-manager to save the business. In particular, since the full amount of the cost required for the pruning of the branches can't be covered by the subsidy of the city, residents and residents' association and the like have to bear the difference. For this reason, there is a need to increase the subsidy for the work required to maintain and manage the preserved tree. In the ordinance of nature conservation in Himeji city, it is in principle a proactive management by the owner of the preserved tree. Government is supposed to help save, but there is no compensation provisions for losses caused by the preservation activity. In reality, because some citizens misunderstand that the trees specified to save trees are to be managed by the government, the difference of recognition has become a cause of dissatisfaction with support.



Fig. 10 *Sennen-sugi* (The biggest tree of a Japan cedar) in *Syosya-zan* photographed by the author



Fig. 11 Souvenir of Himeji city, Baumkuchen named after *Syosya Sennen Sugi* photographed on October 19, 2013 by the author

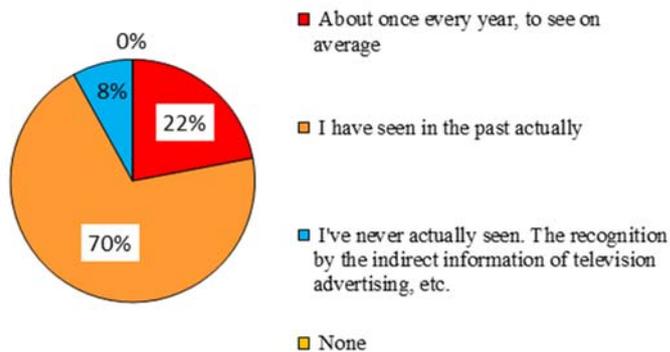


Fig. 12 Cognitive situation of *Sennen-sugi* (The biggest tree of a Japan cedar) in *Syosya-zan* (N=59)
Source: Questionnaire survey in 2012

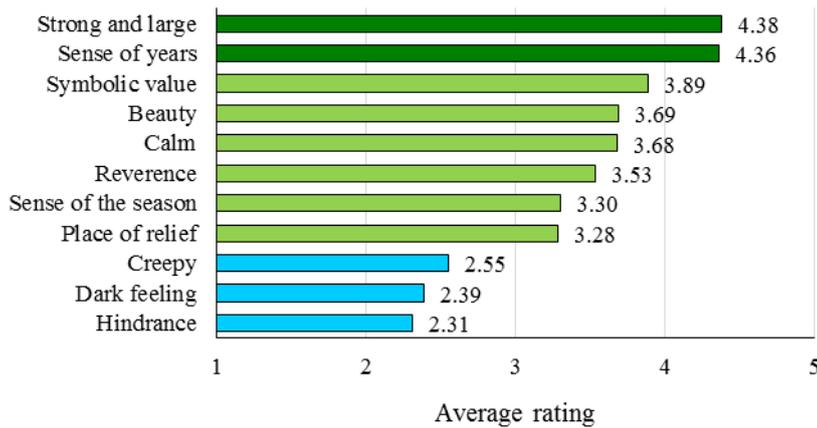


Fig. 13 Impression of *Sennen-sugi* (The biggest tree of a Japan cedar) in *Syosya-zan* (N=73)

Source; Questionnaire survey in 2012

4 CONCLUDING REMARKS

There are waterways and green space in the central area of Himeji city especially around Himeji Castle, but natural green is generally limited in built-up residential area. Therefore, we investigated the awareness of citizens against the preserved trees in the central area and *Syosya-zan Engyo-ji* in this study.

As a result, it was revealed that the citizens are not indifferent to the natural environment of trees, etc., they also do not have a strong interest in it in particular. However, respondents of more than 90 percent understood the need to save the familiar preserved tree and the majority was satisfied with the current state of the preserved tree system. Thus, we can consider that the conservation of preserved trees has been assessed a certain level or more.

Also, we found that as a matter of preserved tree system, some slight differences in the recognition between the people who actually take care of trees and administration. In order to solve or improve this problem, there is a need for local residents and the owner of the preserved tree to reaffirm the spirit of the system. In addition, there must be a better understanding of preserved tree management as a matter of local share. Government must asked every year its management to the owner of the preserved tree, but activities to raise citizen awareness about the natural environment generally, including the preserved tree, is expected with the help of nature conservation Council which resumed activities.

It is to be noted that we limited the preliminary explanations in this study because we could not reach particular results between data items by means of cross tabulation analysis. In this regard, the future task is to clarify the research plan and to verify

the line of questioning with greater aspects in terms of civil consciousness.

NOTES

- (1) The main reasons for selecting Himeji City are two of the following. The first is that the author is familiar with the geographical circumstances here. In the second, the number of preserved tree in Himeji is 101 lines, it is due to relatively large in cities in western Japan. Other cities which government has specified the preserved tree to tree of more than 100, is as follows; Uji city (100 trees), Sakai city (167), Toyonaka city (121), Nishinomiya city (161), Wakayama city (117), Kurume city (118), Kumamoto city (618), and Miyazaki city (169).
- (2) 3,000 yen of subsidy is paid to the management during one year per tree (for two or more, 1,5000 yen per tree) in accordance with the provisions of Himeji preserved tree and Himeji nature conservation ordinance. In addition, 6,000 yen / place have been paid for forest and tree-lined (the number of trees is 20 or less). If the number of trees of one place is 20 or more, 1,500 yen is added to 10 lines each. Furthermore, if the management operator apply to conserve the preserved tree, pruning subsidies to prune the preserved trees has been issued from the city. In a series of work, treatment around the stem and roots, fertilization, control and prevention of pests, the removal of dead branch and the like. Maximum amount is 200,000 yen per application once in one place.
- (3) In view of the time required for investigation, we selected the preserved trees in the central part of Himeji city. As a result, *Cinnamomum camphora* (specified number 9, 42, 75) and *Aphananthe aspera* (specified number 1, 7, 77 (Trees

Celtis sinensis and *Aphananthe aspera* are united)) were chosen.

- (4) For each item, we asked the respondents to answer in five stages; “I think fairly (5)”, “I think a little bit (4)”, “Neither (3)”, “I do not think too much (2)”, and “I do not think at all (1)”.
- (5) The species of 12 preserved trees are as follows; 7 *Cryptomeria japonica* trees, 2 *Abies firma* trees, 2 *Acer palmatum* trees, and one *Tsuga sieboldii* tree.

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APPENDIX



Specification No. 75 *Cinnamomum camphora* Senba elementary school at Shinonome-cho



Specification No. 1 *Aphananthe aspera*



Zenyoji temple at Yashiro-honcho



Specification No. 77 Trees *Celtis sinensis* and *Aphananthe aspera* are united, South of Mizuo shrine at Yamanoi-cho



Specification No. 43 Alumni Hall (*Yurinoki kaikan*) in Hyogo prefectural university



Cinnamomum camphora and *Liriodendron tulipifera*, Hyogo prefectural university at Shinzaike-honcho

