

Factors for Sustainable Citizen Participation in Satoyama Conservation in Urban Areas -A Case Study on Seki-san's Forest, Matsudo-Shi, Chiba Prefecture-

1X18DF05-4 Hiroyuki Mak*

Satoyama is a term used for Japan's traditional landscape, mainly consisting of secondary forests requiring constant human intervention. In urban areas, Satoyama are valuable green spaces, and sustainable citizen participation by the volunteers is crucial for conservation. In this study, a case study is conducted on Seki-san's Forest, located in Matsudo-Shi, Chiba Prefecture. First, the details of activities and spatial usage at Seki-san's Forest are studied, summarizing how the space and resources found are utilized for the volunteer group's activities. Next, interviews are conducted with the volunteer members, clarifying the motivations for participation, and the individual volunteers' preference of place and activities are categorized into four main reasons. From the study, the factors for sustainable citizen participation at Seki-san's Forest are identified as the shared motivations, the utilization of space and resources that are favored by volunteers for various reasons, and the structure of the group that enables the actions.

Key Words : Satoyama, Citizen Participation, Perception of Place, Motivation, Sustainability

1. INTRODUCTION

(1) Background

The target of this research, Satoyama, the traditional secondary forests of Japan, are conserved for their vital role in society as urban green spaces, for their rich biodiversity, ecosystems, and flood prevention¹⁾. Historically, Satoyama was utilized for fuels for farmers, until firewood was replaced with fossil fuels in the 1960s, which led Satoyama to lose its primary function as a source for natural resources. Due to such technological advancements, Satoyama faced the issues of abandonment and under usage, which led to disturbance in ecosystems, deforestation, and a loss of traditional Satoyama culture²⁾. To conserve the landscape, the actions led by citizens and individual expertise emerged from the 1980s to the 1990s, to compensate for the loss of practical usage³⁾. In terms of land use, in 2004, Satoyama conservation was added to the guidelines of the updated urban green space conservation act (都市緑地法運用指針), which allowed Satoyama conservation in a land-use planning-level⁴⁾. Still, currently, the loss of Satoyama is a continuing issue, and the role of citizen participation is vital for the sustainable conservation of the Satoyama landscape. Regarding the sustainability of the Satoyama landscape, the dynamic relationships between humans and nature are especially crucial, through participatory engagement by the citizens⁵⁾.

In this paper, the sustainability of Satoyama

volunteering is studied through the case study of Seki-san's Forest (関さんの森) located in Matsudo-Shi, Chiba Prefecture. Seki-san's Forest is a Satoyama with an area of 2.1ha consisting of an urban forest and private property of the Seki-family, which has been protected and conserved by the citizens since 1996⁶⁾. The volunteer group, Hagukumu-kai (関さんの森を育む会), has a history of 26 years, with activities ranging not only from forest conservation and protection, but also a variety of community activities and education for students. The study will aim to gain insights of the factors behind the volunteers' engagement in the sustainable management of this volunteer site.

(2) Research Objective

This research aims to conduct a detailed study on the citizen participation actions at Seki-san's Forest, as a successful case for a long-running, sustainable Satoyama conservation action where the activities has been led by active engagement of citizens, with diverse actions taken place at the site. For the case study, first, the spatial characteristics and timeline of the usage of space by the volunteer group is organized, to clarify the characteristics and history of citizen participation. Next, interviews are conducted with individual volunteer participants of the volunteer group, to gain insights into the factors that enables the sustainable actions taken at Seki-san's Forest.

*Department of Civil and Environmental Engineering, School of Creative Science and Engineering, Waseda University

2. LITERATURE REVIEWS

(1) Citizen Participation in Satoyama

Case studies for Satoyama conservation have been done in various situations in Japan. Research on Sakuragaoka Park by Kuramoto⁷⁾ studies the volunteering works done by the park, and the demographics of the participants. Research on Maioka park by Watanabe et al⁸⁾ studies the degree of participation of the surrounding communities, studying the reason for the low rate of participation. Regarding forest volunteers' emotional aspects, study by Kouno⁹⁾ shows that the volunteers have experienced reduced tension and stress while participating in actions. Regarding Satoyama volunteers' motivation, Oku et al⁵⁾ compares several volunteer organisations, and analysed the type of motives behind the group and individual.

(2) Satoyama Volunteers and the Perception of Space

Regarding the Satoyama volunteers' perception of place, Nagase et al¹⁰⁾ used photo projection method to compare forest volunteers and university students' perception of space based on tree types and terrain shapes. Takahashi et al¹¹⁾ researched on volunteer's perception in terms of trees and shrubs before and after logging, and concluded that the expertise knowledge of volunteers affects the perception of different plant types.

(3) Study on Seki-san's Forest

Studies on Seki-san's Forest includes the one conducted by Kinoshita¹²⁾, which is a report on the overall activities led by the volunteer group, such as the abstract of activities which took place at the site, the road construction process, and the cooperation of the city municipality and the volunteer group during the road construction dispute. Study by Kadota et al.¹³⁾ studied the process of volunteer group in Matsudo, stating that Seki-san's forest has been the pioneer in forest conservation, and now the Satoyama and forests in Matsudo are managed by the collaboration of public and private sectors.

(4) Characterisation of Research

From the literature reviews, it can be summarized that the citizen participations in Satoyama has been done on the motivations and volunteer groups and individual participants. However, few studies have been done on the activities and spatial perception of Satoyama, and none has linked the spatial characteristics of the activity site with citizen participation actions. Also, there is no in-depth case study of the Seki-san's Forest on its spatial usage and citizen participation.

Therefore, the characteristics of this research is in the aim to explore the factors for a sustainable citizen

participation in Satoyama through the study of spatial characteristics of the volunteer site and the volunteers' motivations and perception, with the research conducted at Seki-san's forest.

3. RESEARCH SITE AND FLOW

(1) Selection of Site

The research site was selected based on the criteria for site selection, which is as follows:

- 1) With a long history of citizen participation
- 2) Quality of participation is participatory, engagement-based
- 3) Feasible to conduct interviews to organizations and participants

Seki-san's Forest is selected as the research site, based on its history of citizen participation of 26 years, the successful, engagement-based participation in events as a voluntary organization that is mentioned in various literatures⁶⁾¹⁴⁾, the feasibility to conduct research and interviews on the participants, and the availability of 26 years of annual activity reports to analyze the actions taken by the volunteer group.

(2) Research Flow

Fig.1 shows the flow of the research process. First, the basic information of the land use and history of Matsudo, overview of Seki-san's forest, and the construction of city planning road is studied. Next, the spatial characteristics and volunteer actions taking place at Seki-san's forest, and the timeline of activities is created. Then, the individual volunteers' motivation for the actions, and their perception and preferences of place and actions, will be analyzed to determine the factors which enabled the citizen participation actions at Seki-san's Forest.

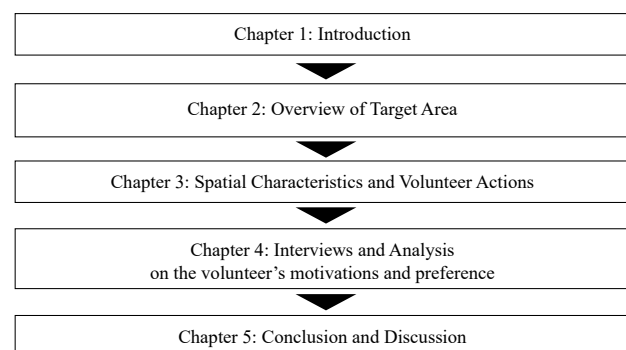


Fig. 1 Research Flow

4. OVERVIEW OF TARGET SITE

(1) Overview of Matsudo-Shi

Matsudo-Shi is 61.38km² in area, with a population of 498,000. The city currently acts as a commuter town as it is located 20km east of central Tokyo.

Historically, the city was mainly used for agriculture, until the rapid urbanization in the 1960s, as Japan entered the era of rapid economic growth. As a result, the area of forest and mountainous area have declined, which now covers 3% of the whole city¹⁵⁾.

(2) Overview of Seki-san's Forest

Seki-san's forest locates at the Northern part of Matsudo-Shi, shown in Fig.2. The site is 2.1ha in area, which is originally a private property owned by the Seki-family for more than 200 years. The site consists of the Seki-family's private property, and the homestead forest which was donated to the Saitama-prefecture Ecosystem Conservation Society (埼玉県生態系保護協会)in 1996, to avoid relinquishment due to inheritance tax. Currently, 1.7ha of Seki-san's Forest, including the homestead forest, and the garden is designated as the special green space conservation district (特別緑地保全地区) in 2013 and 2017, which allows the forest to be preserved permanently.

In 1996, the volunteer group, Hagukumu-kai(関さんの森を育む会) is established to manage the donated forest area. The volunteer group now consists of members of 200 more households, with diverse citizen-led activities⁶⁾.

(3) The construction of City Planning rRad

Apart from the conservation actions, another aspect of citizen participation is in the protection actions from the construction of City Planning Road No.337(都市計画道路337号線). The roadway was first planned in 1964 to be built through the forest, and the city administration conducted an on site survey on the site, to finalise the plan in 2008. However, after numbers of negotiation between the volunteer group and city administration which developed into a civic movement gaining more than 32,000 petitions, the route of the roadway was opened in 2012. As a result, the roadway was built in a curved manner that the warehouses and garden area of the forest would be protected, although the part of the area was lost during construction.

5. SPATIAL CHARACTERISTICS AND VOLUNTEER ACTIONS

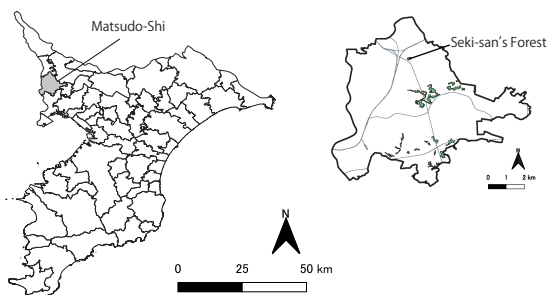



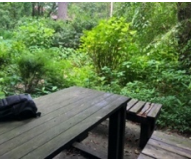







Fig. 2 Location of Matsudo and Seki-san's Forest

Table.1 Description and photos of the main zones of the site

<p>① Homestead Forest(屋敷林)</p> <p>Opened for public use in 1964. The forest is managed through forest conservation actions led by the working group(作業班), utilized for ature observation, educational use for schools. The area consists of a spring water pond, two open spaces with playground equipments, bamboo forest, and walking trail.</p>	 <p>Open Space</p>  <p>Spring Pond</p>
<p>② Garden area(関家の庭)</p> <p>The garden area is a private property owned and resided by the Seki-family. The area is further classified into four zones with various usages, in which elements of traditional satoyama can be found within the small space, including secondary forests and histrocal building. In 2008, the Eco-Museum project started, aiming to preserve the cultural heritages. The maintenance of warehouses and gates is led by the Architecture association, and the ancient documents found in the warehouse are researched by the group (古文書の会).</p>	 <p>Cuture Zone</p>  <p>Study Zone</p>  <p>Satoyama Zone</p>
<p>③ Plum Grove(梅林)</p> <p>The plum grove is used for harvesting and selling at the local free market. The group for plum grove management(梅組) was established in 2008 for the maintenance of the plum trees by professionals</p>	 <p>Harvesting of plums</p>
<p>④ City Planning Road(都市計画道路)</p> <p>The constructed roadway includes planter and flower bed managed by the volunteers. The plants along the guardrails are planted in collaboration with volunteers, local students and city staff. The maintenance of the plants and flowers are done by the group (すず草の会).</p>	 <p>Flower Bed</p>  <p>The Roadway</p>
<p>⑤ Playground(グラウンド)</p> <p>The open space was opened for public use in 1964, used by local citizens for activities such as baseball for the children, and gateball and golf for the elderly. Hagukumukai held events such as local Festival which featured local musicians. The playground was demolished due to the roadway construction in 2011 and the space currently has no usage.</p>	 <p>Playground</p>  <p>Current State</p>

(1) Spatial Characteristics

The spatial characteristics and usage of place are identified from the annual reports provided by the volunteer group. The map of Seki-san's Forest before and after the road construction are shown in Fig.3 and 4. Table.1 shows the main usage and activities done at each site.

The site are classified into 5 main areas according to its spatial characteristics are listed as follows.

- ① The homestead forest
- ② Plum grove
- ③ Playground lost due to road construction
- ④ The garden area
(Further classified as study zone, satoyama zone, culture zone and forest zone)
- ⑤ City Planning Road

(2) Timeline of Citizen Participation

The timeline on Fig.5 shows the timeline of the citizen participation actions taken at each area at the site. From the timeline, the activities taken place at the site are separated into the following three phases.

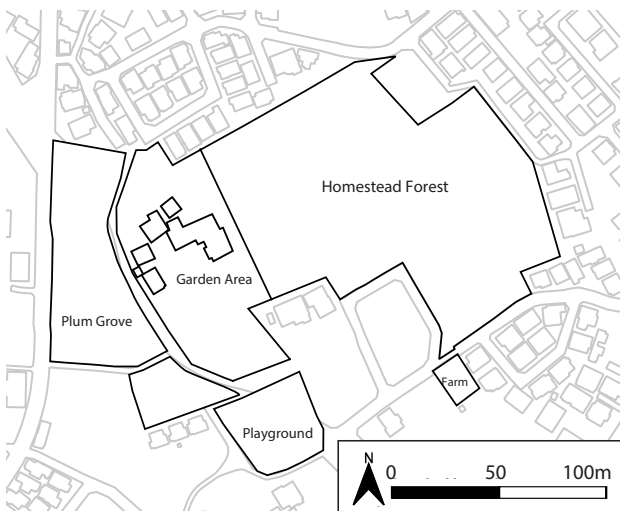


Fig.3 Map of Seki-san's Forest before the construction of city planning road¹⁶⁾

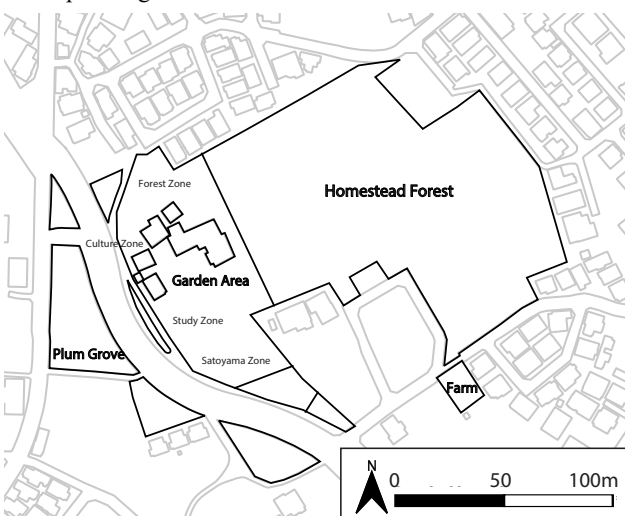


Fig.4 Map of Seki-san's Forest after the construction of city planning road¹⁷⁾

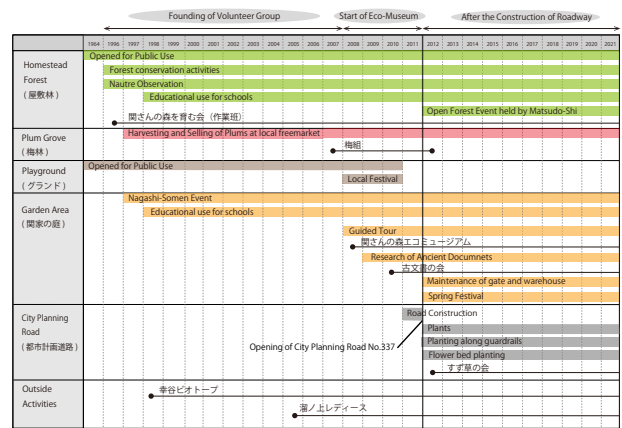


Fig.5 Timeline of Citizen Participation actions taken by Volunteer Group

① 1996-2008

From the initiation of the volunteer group, until the planning of the roadway construction in 2008. In the early years of the group, the activities expands from the conservation actions to community activities, and educational use for local students, also expanding the conservation activities outwards. The activities mainly utilize the harvests found at the forest, and utilizing the forest with its use as secondary forests.

② 2008-2011

Seki-san's forest eco-museum project started in 2008, which aims to preserve the cultural heritages found in Seki-san's forest. The warehouses are used to exhibit the traditional items including the ancient documents found in the warehouse, and the traditional farm tools for guided tours. The activities related to the cultural aspects of Satoyama has increased.

③ 2012-2022

Due to the construction of the city planning road No. 337 which cut through in front of the garden, the activities done at the playground is replaced by the activities done along the roadway, including the plantation of flowers and plants along the guardrail.

The timeline shows how the spatial usage has expanded from the original usage, such as the conservation actions, education, harvesting and selling of plums, to more diverse usage such as the utilization of the cultural buildings and documents, and guided tours and events are held which enables surrounding communities to experience the space and activities taking place at Seki-san's Forest. One of the characteristics of Seki-san's Forest is the garden area, which comprises of elements of traditional Satoyama, as the landowner states, is the "traditional scenery(原風景) of Matusdo". After the construction of the city planning road, activities have emerged to maintain the green spaces and scenery along the road. The whole

of Seki-sans's Forest is currently utilized as new activities emerge in which new sub-groups are created within the group to manage and facilitate the activities.

6. FIELD RESEARCH AND INTERVIEWS

(1) Participatory Observation

Adding to the information gained in Chapter 5, in order to gain further insights of the actions and spatial characteristics, participatory observations are conducted on the dates listed on Table 2.

From the participatory observations, the detailed spatial characteristics of the site, and the demographics of the volunteers are obtained. The group holds the gatherings every two weeks, conducting activities with a group of around 25, and detailed meetings held at the bench located in the garden area.

(2) Interview Method

To investigate the motivation for volunteering and preference of place, semi-structured interviews are conducted to the individual volunteers. The questions included the motivation for volunteering, perception of place and stories and episodes of activities and places they like, or find memorable. The dates of interviews conducted are shown on Table.3, and the

Table.2 Dates and results of participatory observation

Date	Research Method	Activities
2022/02/26	Participatory Observation	Plantings, meeting
2022/03/20	Participatory Observation	Flower bed planting
2022/04/17	Participatory Observation	Bamboo shoot harvesting, meeting

Table.3 Dates of Interviews

Date	Research Method	Interviewee	Content
2022/05/01	Structured Interview	Land Owner	On the reason and motivation for the actions
2022/05/15	Semi-Structured Interview	10 volunteer members	Motivation for actions, and perception of place
2022/05/22	Semi-Structured Interview	2 volunteer members	Motivation for actions, and perception of place
2022/06/5	Semi-Structured Interview	6 volunteer members	Motivation for actions, and perception of place
2022/06/19	Semi-Structured Interview	6 volunteer members	Motivation for actions, and perception of place

Table.4 Information of Interviewees

No.	Gender	Years of experience	Place
1	Male	3	Homestead Forest
2	Male	11	Homestead Forest
3	Male	3	Homestead Forest
4	Male	5	Homestead Forest
5	Male	3	Homestead Forest
6	Male	1	Homestead Forest
7	Female	14	Garden Area
8	Female	20	Garden Area
9	Male	26	Garden Area
10	Male	25	Garden Area
11	Female	14	Garden Area
12	Male	24	Garden Area
13	Male	1	Homestead Forest
14	Female	1	Homestead Forest
15	Female	26	Garden Area
16	Male	18	Garden Area

information of the interviewees are shown on Table.4.

In order to facilitate the interviews, the map of the site shown on Fig.2 and 3 were shown to the interviewees, occasionally letting the interviewee to point to specific areas they are referring to, to effectively gain the information on the episodes.

The interview was conducted towards 16 members with diverse years of participation, from 1 to 26 years to gain diverse results. The number of target episodes are 80-100, referencing similar studies⁽¹⁸⁾⁽¹⁹⁾.

7. INTERVIEW RESULTS AND ANALYSIS

(1) Analysis Method

From the interviews, the motivation of the individual participants, voluntary organization as a whole, and the stories and episodes of activities and place of the volunteers' preference are obtained. The motivations for individual participants are categorized, and the episodes are coded and classified. The episodes of the positive perception of place are coded and classified, then mapped on heat maps. Correspondence analysis is used to analyse the correlation of years of experience to the preference of space and actions. A total of 89 episodes are obtained and classified.

(2) Motivation for participation

1) Main Motivation of the Voluntary Organisation

The central motivation of the volunteer group is gained from the interview with the landowner and the founder of the volunteer group. The motivation behind the conservation and protection actions for the forest can be understood from the comments such as:

"I want to preserve this 2.1ha of land not only for humans, but also where other species can live in harmony." "The children nowadays are always playing

games, and does not go outside. It's better when they go outside, there are places like this. So, we preserve this forest for the children.”

The interview suggests that the main motivation for the actions for the whole organisation, and the establishment of the volunteer group is to preserve the biodiversity of the forest, and to preserve the natural open space for local children, which are the driving forces of the founding and running of the volunteer group, the activities including protection and conservation actions, and the events and educational use which invites local children into the forest.

2) The Motivation for Individual Volunteers

The motivations behind the conservation actions are shown on Table.5. From the semi-structured interviews, the words related to are classified. The motivations can be categorized into ‘environmental protection actions (emphasis on the agreement with Seki-family)’, ‘environmental protection’, ‘interaction with members and friends’, ‘exercising’, ‘pastime after retirement’, and ‘other reasons’.

While reasons for motivation such as ‘agreement with Seki-family’s motivation’ was found mainly by members with 14 or more years of experience, lighter motives such as ‘pastime after retirement’ and ‘exercising’ are found in members with lesser experiences. While volunteers with longer experiences tend to have firmer shared motivations, the new volunteer members are introduced to the group with various

Table.5 Motivation for volunteers

Motivation	No.(years of experience)	Interview example
Environmental protection (Agreement with Seki-family’s motivation)	5 (15,24, 25,15)	“I was drawn the most in the Seki-san’s idea on the forest management. Keeping the forest as it is, and keeping it for the children.”
Environmental protection	3 (26,1,1)	“I wanted to protect the environment. The biggest motivation is to take care of natural environments close to me.”
Interaction with members and friends	3 (3,3,1)	“The motivation now is how I can work and chat with everyone.” “I usually work alone at my garden, but it is nice that I can work with my friends”
Exercising	3 (3,3,1)	“It also feels good after picking up trash and doing other environmental maintenance around the forest
Pastime after retirement	2 (3,3)	“There are nothing to do after retirement, and it is suitable for killing time. It’s also good for my health.”
Other Reasons	2 (18,20)	“The way I can see the children’s growth, and happy faces.”

Table.6 Coding of Episodes

Classification 2	Classification 1	Answers	Example of Place	Interview Example
Interaction with Outside Community	Interaction with outside community	15	Plum Grove	I feel connected to the community, including the people who are participating, people coming to harvest and buy the plums.
	Interaction with local children/students	19	Homestead Forest	The kindergarten and primary school students come here, to observe, and play. I like to guide them
			Garden Area (study zone)	The highschoolers came to cook the somen noodles, and they worked a lot, and that was very fun.
Interaction with Other Volunteer Members	Interaction with other volunteers	11	Garden Area (study zone)	I think that the desk there is used for having conversation and communicating with us
Utilization of Satoyama Resources	Harvesting/ Food related	17	Garden Area (study zone)	We have an event where we bake bread from the nuts, and I like that
	Sense of Accomplishment	13	Homestead Forest	We do the cleaning, like cleaning the mud. That is hard work, but I feel a sense of accomplishment after.
Preference of Place	Enjoying the Scenery	5	Homestead Forest	I like the scenery of the tree that bends downwards, and the forest at the back. Its at the open space down there.
	Feeling of comfort	7	Homestead Forest	“I like the pond at the Homestead forest. I like how I can be in touch with nature, and it suits me well. I feel comfort.”
	Personal enjoyment/others	2	Garden Area (study zone)	I like to come to this forest, and just sit on this bench, watch the forest, eat lunchboxes, and drinking coffee.

lighter reasons, which keeps the number of volunteers stable for the conservation actions.

(3) Volunteers' Perception of Site

From the interviews towards the volunteers, 89 episodes regarding the site and activities have been gathered.

Table 6 shows the type of episodes based on the different sites which are coded from the reasons of preference gained from the interviews. The factors in which the volunteer participants have given the particular actions are categorized twice, first into 8 and into 4 main categories, 'interaction with outside community', 'interaction with other volunteer members', 'utilization of Satoyama resources', and 'preference of place'

(4) Mapping and Analysis of Results

The number of episodes referring to the place is shown on the heat map on Fig. 6, and the numbers of answers based on the classification from Table.6 is shown on Fig.7. The garden area of Seki-san's Forest has the most answers obtained, with diverse actions and activities taking place, being the central area for interaction and preference. Fig.7 shows the diverse usage and reasons of preference at each area, in which the spatial characteristics at the area are utilized for various, which attracts the volunteer members to join the activities held.

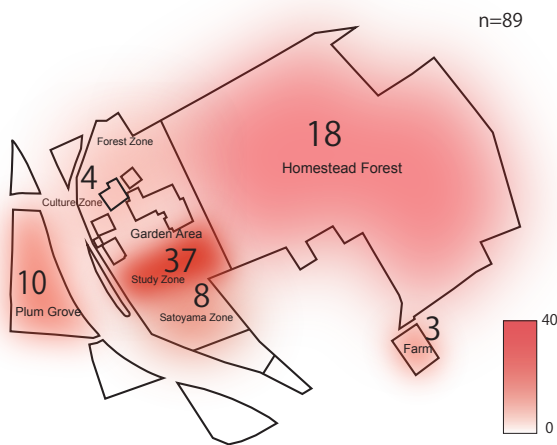


Fig.6 Mapping of the number of episodes gained from the volunteers

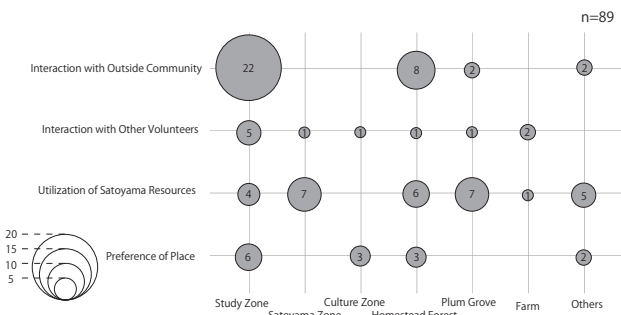


Fig. 7 Number of episodes for each area by classification

(5) Difference in Years of Participation

The difference in perception is shown on Fig.8. Correspondence analysis is conducted with the number of years of experience and classification 1 from Table.6. The x-axis is interpreted as people oriented activities and conservation activities, and the y-axis interpreted as personal and group activities. From the grouping by the number of years, the ones with lower number of experience prefers the activities related to conservation actions and personal enjoyment, while ones with more experience enjoys interaction with people, in a group setting. This structure of the group can be analysed using the concept of legitimate peripheral participation proposed by Lave and Wenger²⁰), which categorises layers of community members, with the beginners on the outer end, and the experts in the core, shown on Fig.9. As the ones with more experience are now becoming the role of teachers for the beginners and facilitators of the activities, which are also apparent from the interview answers by the ones with less experience such as "it's interesting to learn the knowledge" and "they teach us about the names of the flowers, so it is nice to be able to learn them".

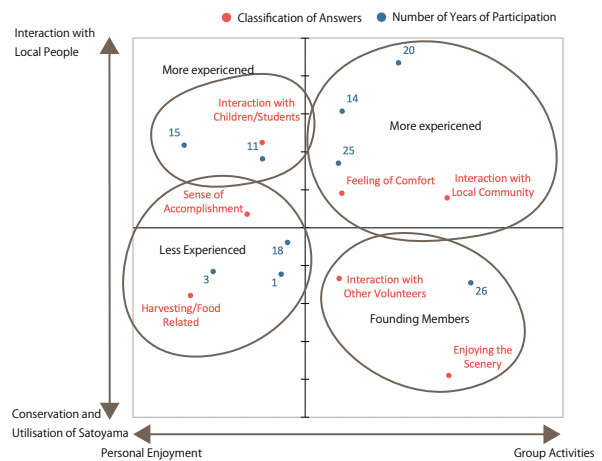


Fig. 8 Correspondence analysis results

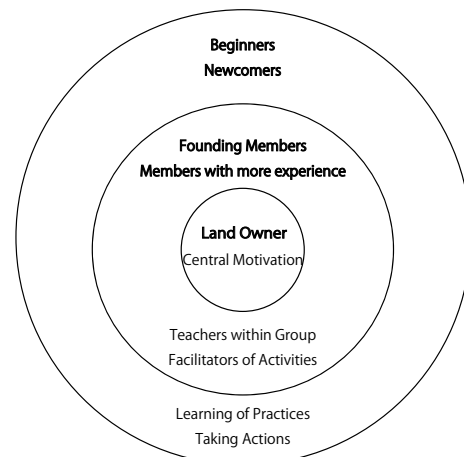


Fig. 9 Legitimate peripheral participation model within group

8. Conclusion and Discussion

(1) Conclusion

1) Spatial Characteristics and Usage

The details of activities and timeline of Seki-san's Forest are organized, clarifying the three phases of actions, in which the range of activities expanded from the original conservation actions, to more diverse actions through the years. Especially, the garden area comprises of the characteristics of traditional Satoyama within a small space, such as secondary forests and historical buildings, which acts as the central area for activities with variety of usages. Currently, the whole of Seki-san's Forest is used for public use, utilising all of its resources, as new subgroups emerge as the range of activities increase which enables the activities.

2) Factors for Sustainable Citizen Participation

From the interviews, the motivation behind the actions are obtained. The strong, central motivation of the landowner is shared within the main members, and for the less experienced, lighter motivations such as recreation become the reason for the new members to participate in the volunteer group.

The preference of place and actions are categorized into 4 categories, and the whole area of Seki-san's Forest is currently being utilized, in which the diverse usage meets the diverse preferences of the volunteers. There is a preference for conservation actions for the ones with less experiences, and the ones with more experience acts as teachers, in a structure of legitimate peripheral participation.

The factors for the sustainable citizen participation at Seki-san's Forest are identified as the utilization of space and resources found at the site that are favored by volunteers for a variety of reasons, the structure of the group with a strong, central motivation, and the actions enabled through the education of knowledge and expertise of the newcomers.

(2) Discussion

This study is conducted through a detailed study on a single case of Seki-san's Forest, and the factors that led to the successful, sustainable actions at Seki-san's Forest can be interpreted as the active utilisation of the place, the shared motivation for the volunteers, and the diverse utilisation of the space. The findings can be applicable in other Satoyama conservation groups with similar backgrounds, such as privately owned urban forests, from the aspects such as the utilization of the resources of Satoyama, the reliance of the active engagement by the citizens to create new activities which leads to involvement of outside communities, and have sustainable structure of participation through educational structures.

In future research, further studies can be conducted at Seki-san's Forest, such as the perception of the forest by the surrounding citizens and event participants, to study its significance of the forest for the surrounding communities, as this research focuses only on the volunteer members.

REFERENCES

1. Takeuchi, K et al: Satoyama: The traditional rural landscape of Japan, Springer, 2003
2. Fukamachi, et al.: Advances in Satoyama studies: Looking for the Planning of the Interface between People and Nature, Journal of the Japanese Institute of Landscape Architecture, Vol. 61, No.4, pp.276-280, 1998
3. Jiao, Yuanmei, et al. :Crises of Biodiversity and Ecosystem Services in Satoyama Landscape of Japan: A Review on the Role of Management, *Sustainability*, vol.11, no.2, 2019, pp. 454.
4. 国土交通省：都市緑地法運用指針, 2004
5. Oku, Structure of forest volunteer organizations' and participants' motives for volunteer activities in Minoh National Forest, Journal of the Japanese Institute of Landscape Architecture, Vol. 75, No.5, pp.82-85, 2012
6. 関啓子：関さんの森の奇跡,新評論, 2019
7. Kuramoto, N. et al. Opinions About the Activities and Organization of Volunteers Working for the Conservation of the Coppice in Sakuragaoka Park in Tokyo, Journal of the Japanese Institute of Landscape Architecture, Vol.65, No.5, pp.455-460, 2001
8. Watanabe, N. et al: citizen participation in green space conservation activity and citizen consciousness, Transactions of AIJ. Journal of architecture, planning and environmental engineering, Vol.60, No.717, pp.2545-2555,2015
9. Kouno, T: The Psychological Impact of Green Space Conservation Activities on Staff and Citizen, Journal of the Japanese Institute of Landscape Architecture, Vol.82, No.5, pp.455-460, 2019
10. Nagase, Y et al: The study of on the recognition of the forest of forestry volunteer and university students, Journal of the Japanese Institute of Landscape Architecture, Vol. 57, No.5, pp.615-618, 2004
11. Tatsui, M et al: Effect of Satoyama Preservation Activity by Civic Group on Vegetation and Participants' Awareness, Journal of the Japanese Institute of Landscape Architecture, Vol. 69, No.5, pp777-780, 2006
12. 木下紀喜：市民が守った市街地の里山, 山林 Vol. 1633, pp.45-53, 2020
13. S.Kadota et al : The Study of Training and Establishing of Citizen's Forest Conservation Activity by p-p-p., Journal of the Japanese Institute of Landscape Architecture. vol. 74 No. 5, pp.693-698, 2011
14. 中村良夫：風土自治, 藤原書店, 2021
15. 松戸市：松戸市みどりの基本計画,2021
16. 千葉県松戸市 ゼンリン住宅地図 2007
17. 千葉県松戸市 ゼンリン住宅地図 2021
18. Ishihara et al : A study on the patterns of place attachment from the viewpoint of experience aspects for university students, J. Archit. Plann. AIJ, Vol.85, No.777, 2020
19. Kato : A study on settings with attachment of the elderly in their neighborhood environments, J. Archit. Plann. AIJ, Vol.78, No.687, 2013
20. Lave, Wenger: Situated Learning: Legitimate Peripheral Participation, Cambridge University Press, 1991