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<https://doi.org/10.5109/4495>

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出版情報：九州大学大学院農学研究院紀要. 47 (2), pp.267-275, 2003-02-01. Faculty of Agriculture, Kyushu University

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## **Local Inhabitants' Consciousness of Using and Managing Urban Forest Areas – A Case Study of [Iki-no Matsubara] in Fukuoka City –**

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*(Received October 28, 2002 and accepted November 7, 2002)*

Many forests in Japan are under the control of national and local governments. Most of these are designated for recreation. As demand of recreation increases, problems related to the management of these forests including trash, fire and crimes have been encountered. This study uses questionnaire surveys to examine the effectiveness of a new method of management adopted to tackle these problems in Iki-no Matsubara forest in Nishi-ku of Fukuoka City. The study revealed that the urban forest areas function not only as recreation's field but also as life environmental wood for local inhabitants at present, and the frequency of use is on the increase, too. At present, the need of Iki-no Matsubara as well as its management methods by mowing scrubs, building a fence, and taking an unoccupied lot inside of the fence are mostly admitted by local inhabitants. Particularly, logging the forest is effective for reducing the amount of garbage and forming a beautiful scenery. It was obvious that the problems faced by the urban forest areas are human moral problems such as dogs' excrement together with environmental problems. Therefore, some corresponding measures against these problems are necessary. The surveys of this study deal with the inside management methods and it is suggested that the whole and systematic problems in controlling them as well as the control technologies have to be considered.

### INTRODUCTION

In Japan, 70% of land area is covered by forests (Mochida, 1998). In recent years, with the improvement of family life, leisure activities in and near forested areas enjoy popularity. As heavy urbanization develops, many people come to enjoy the forest and its environment as recreational grounds in many ways (JAFTA, 1980). Iki-no Matsubara in Nishi-Ku of Fukuoka City is a 50 ha of urban forest area, which contains Sawara training place of the Research Institute of Kyushu University Forests. Matsubara is an artificial wood that has been developed not only as a seashore shelter-belt to protect agricultural land from strong wind and flying sand since Edo era but also has been used and managed as a forest training place of Kyushu University since 1922.

However, as demand of recreation increases and the problems of controlling trash, fire and crime become serious in the meantime, new management methods were intro-

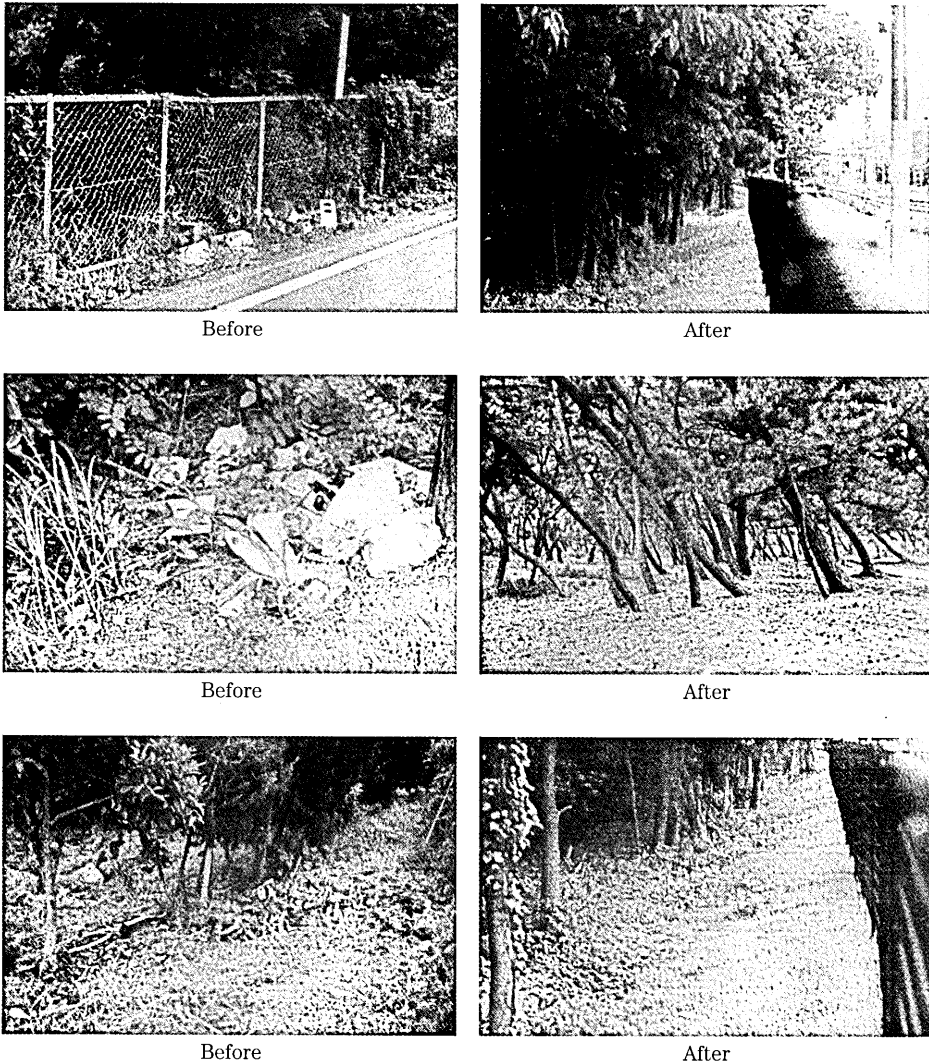
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duced in 1995 (Inoue and Oda, 1994). One method was that Fukuoka City purchased a part of the site and established as an area of forest park to cope with the increasing demand of recreation. The other management method was to mow miscellaneous trees within the range of about width 2m which went along inside of the forest and fence, by Kyushu University, so that trash, fire and crime problems may be coped with. With this conversion of management methods, Iki-no Matsubara has been significantly changed. And the management project was just finished tentatively in April 2000 (Fig. 1).



**Fig. 1.** Change of Iki-no Matsubara after the introduction of new management methods.

Since such a conversion of management methods has strongly administrative characteristics, it is doubtful how inhabitants accept them and what kind of actual effects these new custody methods have. Moreover, the questions on the demand and management project of the forest in urban areas are also serious in other urban forest areas located at Fukuoka city. And since these new methods of forest management are expected to be adopted in other urban forest area, it is of paramount importance to examine their effects carefully (Fukuoka City, 1994). This study on the use and management consciousness of inhabitants aims at examining the effects of these new ways of management adopted in Iki-no Matsubara and the controlling directions of future urban forest management.

## MATERIALS AND METHODS

The use and management consciousness of the urban areas' forests by the inhabitants is thought to be much different, even among those inhabitants living in the same area and can vary according to how the areas are bordered on the urban forest. So, the investigation subjects were divided into "users", "forest residents", "neighborhood residents (residents within about 500m from Iki-no Matsubara)", and "others (residents between about 500~1,000m from Iki-no Matsubara)" based on the distance between the urban forest areas and the location where they live. Then, the consciousness of inhabitants was examined by a questionnaire survey focusing on the following items; 'the functions and use', and 'managing ways' and 'the future control direction of the urban forest'.

Each item in the questionnaire investigation was made by inhabitants themselves, which is also meant that inhabitants can select the number of question items. The investigation was carried out by visiting and interviewing directly with inhabitants at their houses from March to April 2000. As a result, 37 question copies are collected from "users", 54 copies from "inhabitants in the urban forest areas", 37 copies from "neighboring inhabitants", and 27 copies from "others". Totally, 155 copies of questionnaire were collected. The following Table 1 shows statistical results from those collected 155 copies.

**Table 1.** The Results of Questionnaire Survey

Survey Subjects	Subject Definition	Number of collected questionnaire responses
Users	Inhabitants using the urban forest areas	37
Forest residents	Residents living inside the urban forest areas	54
Neighboring residents	Inhabitants living neighboring the urban forest areas (within about 500m distance)	37
Others	Inhabitants living apart from the urban forest areas(over 500m distance)	27
	Total	155

RESULTS AND DISCUSSION

**The functions and using conditions of the urban forest**

The first question was about the functions of Iki-no Matsubara perceived by the inhabitants. The answers were as the followings: the function of “seashore shelter belt” that protects from sea breeze and sand” was recognized by 80% of the inhabitants; “health and rest wood”, the function that is for recreation such as walking, exercise, and hiking; and the function of “wood for environmental conservation”, such as scenery and scenic beauty, 55%. Therefore, Iki-no Matsubara forest has not only health and rest functions of forest but also a function (conservation of life and environment and formation of scenic beauty) as a life environment forest for the inhabitants. On the other hand, 45% of all users use Iki-no Matsubara everyday or 2~3 times a week, and their purposes of using it were various ranking from walking, exercise to recreation, sea bathing, and hobby activities. Twenty percent of the whole answered that “The number of using frequency decreased” while 40% of the whole answered “It generally increased.” in comparison with the using frequency during the past 5 years (Fig. 2).

Though the using frequency of Iki-no Matsubara forest is affected by the new way of management, Iki-no Matsubara’s functions, its using conditions and the number of using frequency largely vary according to the distance from the pine grove.

As for the functions of the urban forest areas, they not only function as a seashore shelter-belt, health and rest wood, and life environmental wood but also have some minus-like functions, for the inhabitants living inside the forest area as well as the

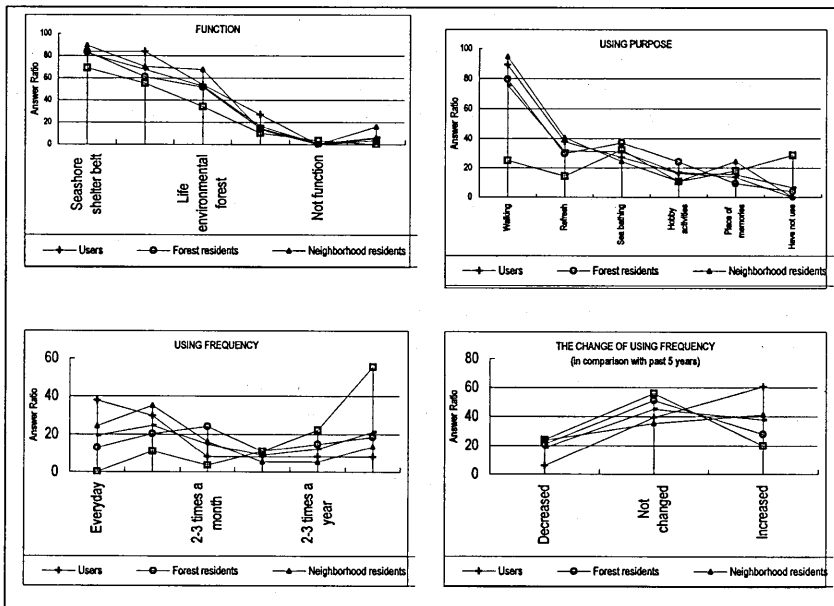


Fig. 2. Iki-no Matsubara’s functions and use.

inhabitants living neighboring the forest areas. But, the evaluation of “other residents” toward these three functions was lower relatively, and they almost don’t feel a minus-like function, either. Then, use number of times is small in “other” residents, and they hardly have a change in the use number of times, too.

### Evaluation of new ways of managing the urban forest area

At present, the main focuses of these new management ways are to mow scrubs inside Iki-no Matsubara, to build a fence (iron material fence of the height 1.5~2.0 m whose prospects are good) bordered on by roads and residential areas, and to take an unoccupied lot inside the fence. In order to investigate these new ways of forest management the public opinion was surveyed. First, as for fence, most of the area inhabitants admit the need of hence; 60% of the inhabitants who answered the question replied “The fence is necessary”, and 30% of them recognized the need of building a fence but preferred modifying the shape of fence, for example, “a row of hedge or trees”. And finally, 20% of them gave a negative answer, “You had better not be here, the fence is unnecessary”.

By the way, among the 35 persons who gave a negative answer, 22 persons (63% of the total) showed an affirmative attitude, “The fence is good”, or gave plural answers. The above shows a consciousness that building a fence is not the most desirable measure, however, it is necessary for an effective management of urban forest areas.

On the other hand, as for mowing scrubs inside the forest areas and taking an unoccupied lot, 80% of the total answered “It has to be done gradually”, and the persons who gave these replies, “garbage amount was reduced” and “The forest landscapes were improved” were 80% of the total answers. And the negative opinions such as “It is unnecessary”, “The scenes got poor” and “You should do freely” were about 10%. Generally, mowing scrubs and taking an unoccupied lot are evaluated highly as a control method of managing the urban forest areas, and they were specially effective for reducing the amount of trash and secure better prospects and scenery (Fig. 3).

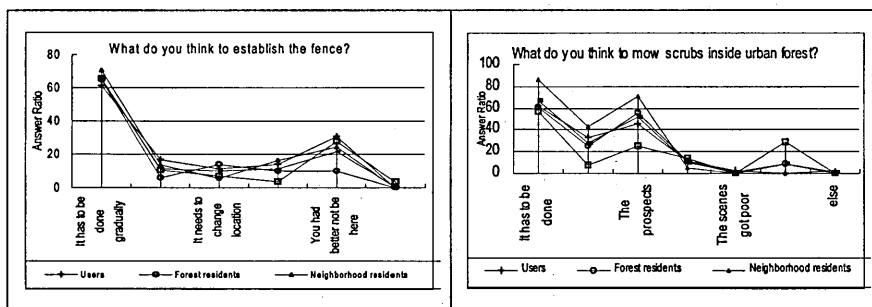


Fig. 3. Evaluation and opinion toward building a fence and mowing scrubs.

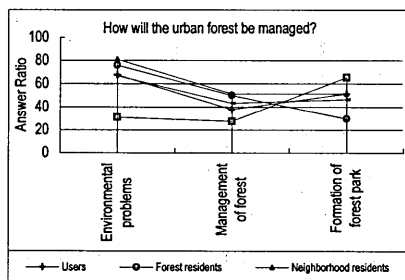
But, there are many opinions concerning the improvement toward the way of managing it, too. There were opinions toward building a fence such as “There needs an entrance escape mouth from molesters and so on is necessary”, “The height of fence had better be lowered than the present”, and “The bottom height of the fence had better be raised for the growth of plant and animal’s passing through.” On the other hand, as for mowing scrubs, they gave answers, such as “It was done too much, so that animals and plants disappeared”, “It has prospects too much”, “I want it done only in necessary places”, “You should tell us about the working day”, and “in 3 year at a time, fully”. The efficiency of mowing and building a fence was evaluated highly in principle, but more concrete standards of management and a control index should be considered for all the more efficiency (Table 2).

**Table 2.** Opinions of improvement toward the way of managing

Items	Opinions
Fence (35 responses)	<ol style="list-style-type: none"> <li>1. There needs an entrance escape from molesters and so on is necessary.</li> <li>2. The height of fence had better be lowered than the present.</li> <li>3. The bottom height of the fence had better be raised for the growth of plant and animals' passing through.</li> </ol>
Mowing (16 responses)	<ol style="list-style-type: none"> <li>1. It was done too much so that animals and plants were disappeared.</li> <li>2. It has prospects too much. I want it done only in necessary places.</li> <li>3. Working day and time should be announced.</li> <li>4. Frequently too much. In 3 year at a time, fully</li> <li>5. No matter what, not a single tree should be cut</li> </ol>

### Consciousness of the future control subject

Under the four categories, “Kyushu University”, “Fukuoka City”, “volunteers”, “area inhabitants” a question, “who should be in charge of management and control from now on?” was given. As a result, the percentage of persons who answered that you should let it controlled by “Kyushu University” and “Fukuoka City Government” was respectively about 60%, and the answers of “(Citizen’s) volunteers” and “area inhabitants” about 10% respectively. The area inhabitants hope a control by public administration rather than by



**Fig. 4.** Consciousness of the future control subject.

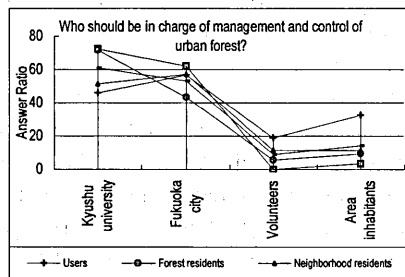
themselves (Fig. 4). By the way, more than half out of 82 people (42 people, 53%) who chose Fukuoka City replied to other control subjects and the plural as mentioned in Kyushu University and so on. And other opinions are “The management by themselves has limitations”, “In case that it was controlled by inhabitants, some troubles will easily arise”, “In case of Fukuoka City’s management, the management can be easily arbitrary”, and “It will be better that Fukuoka City owns the land and Kyushu University manages it”. They feel that control by themselves has some limitations, nevertheless, they have a feeling of crisis about the separate control by the public administration (Table 3).

**Table 3.** Other opinions

Opinions
1. The management by themselves has limitations. In case that it was controlled by inhabitants, some troubles will easily arise.
2. In case of Fukuoka City’s management, the management can be easily arbitrary.
3. It will be better that Fukuoka City owns the land and Kyushu University manages it.

### Recognition about the future’s control direction

Under the three categories, “control of the environment”, “management of forest”, “formation of forest parks” a question, “How will Iki-no Matsubara be managed from now on” was asked. As results, 70% out of the total was “environmental management” confronting environmental problems such as fire accidents and garbage. The categories of “management of forests” and “making forest parks” for pine webworms and formation of scenery were 50% respectively. These answers reveal that most people hope for effective control of environments. But, the difference by the residence area is big here. The persons who insist dealing with this issue as an environmental problem were 80% out of “Inhabitants living inside the forest areas” and “inhabitants living neighboring the urban forest areas”, but 30% out of “residents living in other places”. Instead, 70% insisted that a project of formation of forest parks should be proceeded. In other words, inhabitants living neighboring urban forest areas want a countermeasure on environmental problems, but inhabitants living apart from the urban forest areas want a formation of forest parks (Fig. 5).



**Fig. 5.** Recognition about the future’s control directions.



On the other hand, the environmental problems that Iki-no Matsubara faces at present are the excrement problem of dogs, garbage problem, crime problem and fire problem. When arranging the opinions (20 persons living in Matsubara) on the problems confronted, 55% were garbage, crime, and dogs' excrement problems, and 40% was the problem of loathing dogs' excrement. The future control problems such as the excrement of the dog together with the environmental problems were important in managing the urban forest areas (Table 4).

**Table 4.** The environmental problems that Iki-no Matsubara faces at present Environmental Problems

Environmental Problems	Responses
Dog's excrement	8
Crime, Fire	7
Garbage	4
Forest reservation	1

## CONCLUSION

The inhabitants' consciousness about their use and management of Iki-no Matsubara in Fukuoka City Nishi-ku has been examined to determine the methods of controlling the urban forest areas. As a result, the following points have been observed.

The urban forest areas function not only as recreation's field but also as life environmental wood for local inhabitants at present, and the frequency of use is on the increase, too. But observing the number of users living inside the urban forest areas, the major function of the forest was that the environmental wood and the number of forest use were large. On the other hand, for the inhabitants living in other areas, the major function of the forest was recreation rather than life environmental wood, and the frequency of their use was not so often. Therefore, the use of the urban forest areas varies very much according to their functions on the residence area and the examination subjects.

At present, the need of Iki-no Matsubara as well as its management methods by mowing scrubs, building a fence, and taking an unoccupied lot inside of the fence are mostly admitted by local inhabitants. Particularly, logging the forest is effective for reducing the amount of garbage and forming a beautiful scenery. However, the voice of complaint is high in some detailed provisions, so that more concrete standards and development of control technology are necessary.

Area inhabitants feel limitations in their capacity of managing the city wood, and they hope the controls by the public administration. But, a feeling of crisis toward the control of the dogmatism of the public administration is big so that a request for control of plural institutions such as a university and the public administration is highly desired.

With regard to the control technology from now on, the inhabitants living inside the urban forest areas want some corresponding measures against environmental problems, and the inhabitants living in other places strongly want to make the forest areas parks. And the ways of their thinking of the future control directions of "the wood and residents"

largely varies according to the distance from the urban forest areas. Furthermore, it was obvious that the problems faced by the urban forest areas are human moral problems such as dogs' excrement, together with environmental problems. Therefore, some corresponding measures against these problems are necessary.

The surveys of this study deal with the inside management methods and it is suggested that the whole and systematic problems in controlling them as well as the control technologies have to be considered. We understand the followings on the whole through this research that the inhabitants' consciousness about the urban forest's functions and people's use and management techniques of them much varied according to the distances from the urban forest areas, Iki-no Matsubara. This indicates that the surrounding residential environments are important variables in deciding the purposes and characteristics of city wood as well as the directions of controlling it.

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